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GRAIN INSPECTION, PACKERS AND STOCKYARDS ADMINISTRATION
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CHAPTER 1
PROCEDURES FOR OFFICIAL WEIGHING SERVICES

1.1 GENERAL EMPLOYEE RESPONSIBILITIES

The integrity of an official weight certificate is essential. Official personnel must avoid or eliminate situations that might affect or raise questions on the accuracy of a weight certificate.

a. Supervisor Responsibilities

(1) General

Managers and supervisors[1] must ensure that official personnel[2] perform weighing procedures correctly.

(2) Specific

(a) Ensure official personnel:

1) Follow weighing instructions and procedures;

2) Follow proper security procedures for radios, seals, keys, and certificates; and

3) Complete documentation, such as weight and seal logs, neatly and correctly.

(b) Provide official personnel with applicable weighing equipment, instructions, handbooks, and other required materials.

(c) Ensure smooth and complete communication of pertinent information between shifts or work crews.

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[1]The term "manager" as used in this chapter means FGIS Field Office Manager (FOM) or equivalent supervisory position agency manager (AM) at an official agency. The term "supervisor" means FGIS shift supervisor or equivalent supervisory position at an official agency.

[2]Throughout the text, the term "weigher" will be interchangeable with "official personnel." The weigher's responsibilities may be different in automated weighing systems approved by FGIS.

(d) Solve or direct to responsible personnel all weighing and personnel problems.

(e) Provide technical weight training to personnel as necessary.

(f) Ensure proper communication with elevator management of instructions, complaints, equipment failures, scale malfunctions, delivery system problems, safety hazards, or other pertinent information.

(g) Maintain an up-to-date Facility Handbook.

(h) Inform management of any grain handling or weighing systems changes. (§800.46 of the regulations under the United States Grain Standards Act (Act) requires an elevator to notify official agencies.)

(i) Oversee the completion, issuance, and proper disposition of all official weight documents. (All unusual situations shall be documented on the weight loading log, scale tapes, or other applicable locations.)

(j) Comply with safety requirements include documentation of safety hazards. Follow applicable instructions.

b. Weigher Responsibilities

(1) General

To perform weighing procedures properly, the weigher must:

(a) Ensure conditions necessary for proper scale(s) operation prior to each shift (see Section 1.4) and operate or supervise operation of scale(s) according to instructions.

(b) Thoroughly document weighing process and be responsible for the issuance of legible, accurate certificates.

1) Maintain and implement current procedures, instructions/directives, and notices for weighing services; possess working knowledge of scales operated or supervised and of grain handling system including diversion points; and recognize and document scale malfunctions.

2) Ensure security of keys, radios, locks, seals, certificates, scale tapes, tickets, and other records.

3) Provide on-the-job training for assigned personnel.

4) Communicate, if directed, to elevator personnel/management any instructions, complaints, equipment failures, scale malfunctions, safety hazards, or other pertinent information.

5) Perform all other weighing duties as directed by supervisor to ensure accurate certification of weights.

(2) Specific

Unless automated methods are in place, the weigher monitors weighing activities of elevator personnel and verifies control board settings, digital weight displays, and printer operation and output. Control board or monitor settings must be physically verified a minimum of once per shift and results documented on export weight loading log. Comparison of the visually checked digital weight indicator to the printout assures proper system operation. Managers determine frequency of printer/visual checks which must be documented on scale tapes. Specifically, the weigher must:

(a) Recognize actual or potential problems with elements in the weighing and/or printing system affecting the accuracy of weights. Noted scale and printer malfunctions must be documented following Chapter 2 of the Weighing Handbook.

(b) Verify seals on the limited access areas of scales used for official weighing or supervision of weighing and document checks on Scale Record Log and Seal Record Log.

(c) Observe control board or monitor to ensure grain flow security by verifying that the lights, switches and control board monitors are operating properly and the controlled gates, slides, and valves are in correct alignment. Assistance from the elevator weighman to activate the display switch may be required. Security checks made on the handling and weighing system are documented on the Weight Loading Log.

(d) Ensure scale operation according to Section 1.4:

1) Verify digital weight indicator to printed weight through monitoring the weighing of drafts, and inspecting weigh hoppers, lever systems, and load cells for conditions impairing normal scale operations.

2) Record accurate and legible scale tickets or tapes.

3) Inspect scale and garner hopper gates for leaks at least once per shift.

4) Managers determine the frequency of checks between the digital weight indicator and printed weight. Checks must be denoted on the scale tapes.

(3) Conduct surveys of weighing system:

(a) Verify elevator's scale and delivery system are clear of grain.

(b) Ensure necessary conditions for proper performance of equipment.

(c) Secure spouts, trippers, distributors, and other diversion points with seals, locks, or electrical lockouts to ensure grain flow security.

(d) Check and record numbers and location of seals and locks on Seal Log.

(e) Check cleanout of shipping bins.

(4) Obtain carrier identification and, if possible, examine conditions of carrier that would affect quantity of grain shipped or received. For inbound grain, carrier must be checked according to Section 1.2 for cleanout after weighing operation. For shiplot grain, stowage of grain on carrier must be documented.

(5) Monitor all diversion points to maintain grain flow security including belts, conveyors, boot pits, elevator legs, shipping bins and other diversion points, and marine legs, clam shells, loading spouts or other loading/unloading apparatus.

(6) Monitor weighbacks, rejected and returned (R&R) shipping bins, and offloading or discharging of grain from carrier.

(7) Thoroughly document all official weighing operations.

1.2 INBOUND MOVEMENT

Inbound grain movements are weighed at the applicant's request. Inbound intercompany barge movements at export elevators must be weighed officially under the Act. Incidents of suspected attempts to avoid these mandatory requirements must be reported as directed in Chapter 2, "Weighing Grain Without Official Supervision."

Weigher's duties are to monitor the efficient transfer of all approved railroad track, vehicle platform or hopper scales; monitor grain weighed in hopper scales; use seals, locks, control board lockouts or other approved means, including FGIS approved automated weighing systems, for Class X weighing; and document spills as instructed in Sections 2.3 and 2.4 of this handbook.

a. General Unloading Operation Guidelines

(1) Pre-unloading Responsibilities

FGIS personnel must supervise pre-unloading operations from barge, rail, or truck movements. Specifically, they must:

(a) Record on the weight certificate carrier identification and any factual conditions pertinent to the carrier's ability to transport grain, and if possible, identify type of grain. In the absence of official inspection, use of verified elevator manifests is acceptable. Managers establish verification procedures which may include checking conveyor belts, checking D/T samplers, performing random pre-unloading checks, observing closed-circuit television monitors, or communicating with co-workers in the carrier's vicinity.

(b) Record railcar seal disposition at the applicant's verbal or written request noting the date, requester's name and carrier(s). The verified disposition of each of the lower seals, (i.e., intact, broken, not present or not properly applied), must be recorded in the "Remarks" section of the weight certificate as follows:

1) Individual cars:

"Seals on B-1 and B-2 intact, seal not present or broken on B-3."

2) For unit trains:

"The following carrier compartment seals were broken or not present (e.g. NAHX 40963-B-1 and B-2); all other carrier compartments were properly sealed."

3) Safety reminder:

CRAWLING UNDER HOPPER CARS TO VERIFY SEAL CONDITIONS IS PROHIBITED!

(c) Survey the elevator's scale and delivery system each shift prior to the start of weighing or if a spill is suspected. Document any conditions that might affect performance of the scale or other grain handling equipment.

(2) Unloading Responsibilities

During the unloading operation the weigher must:

(a) Follow procedures in Section 1.4 for operating and monitoring scales.

(b) Document inbound carrier supervision with scale tapes or tickets.

(c) Maintain grain flow security by ensuring delivery to the scale with minimal waste.

(3) Post-unloading Responsibilities

Upon completion of unloading, official personnel must:

(a) Ensure removal of all possible grain from carrier and from delivery system. Excluding barges, if possible estimate the grain remaining in the carrier which could reasonably be removed and/or grain that was spilled.

(b) Verify cleanout by visual, mechanical or electronic methods with frequency determined by type of carrier. Barges require continual supervision. Rail and truck carriers require periodic checks, with frequency and documentation procedures determined by the manager as necessary to maintain acceptable results.

(c) Follow certification procedures in Chapter 2.

(4) Scale Testing Responsibilities

Where house grain cannot be used to conduct a build-up on a hopper scale test, the weigher must:

(a) Use inbound carrier's grain to conduct a build-up test on a hopper scale. If the test shows the scale out-of-tolerance or needing adjustment, the scale official determines the correct weight.

(b) Issue an unqualified certificate and write explanation on scale tape or ticket.

b. Specific Operations Guidelines

(1) Inbound Trucks Weighed on Platform Scales

(a) Establish a consistent policy of either weighing drivers/riders on or off scales.

(b) Obtain tare weight: Weigh empty vehicle exactly as full vehicle was weighed for gross weight, (i.e.,same riders or accessories.)

(c) Do not use pre-determined tare weights for empty vehicles.

(2) Local Movements

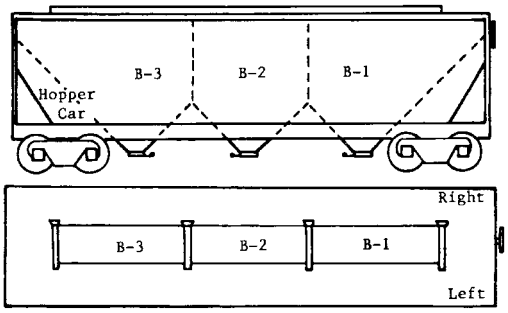
(a) Officially weigh movements of grain within the elevator upon request of elevator management.

(b) Follow all procedures in Chapters 1, 2, and 3, of Weighing Handbook for operation of scales, monitoring grain flow, documenting facts and certifying results.

(3) Documentation Terminology

When documenting carrier condition or grain location on inbound carriers, use the following terms:

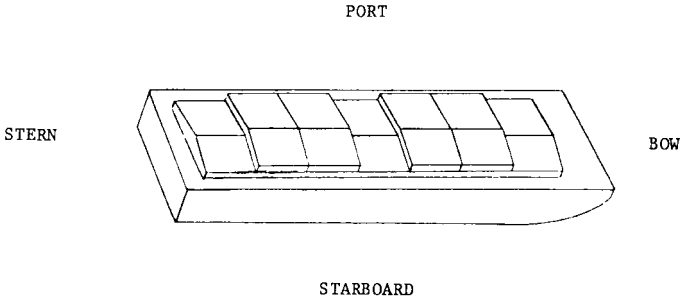
HOPPER CAR DIAGRAM



(a) Hopper Cars

Identify brake end as "B" end; label hopper nearest brake end "B-1" and remaining hoppers toward opposite end in sequence (e.g. "B-2" and "B-3".)

BARGE DIAGRAM



(b) Barges

Term forward end of the barge "bow" and after end the "stern." When facing the bow end, the left side is "port" and right side is "starboard."

1.3 OUTBOUND MOVEMENT

Export shipments require official weighing; other movements are weighed at the applicant's request. Exempted export shipments are identified in FGIS Program Directive 902.1 with the procedures for requesting waivers to weighing requirements.

Outbound grain movements must be efficiently delivered to the carrier without avoidable waste or loss. Monitor grain flow from scale to carrier, and for Class X weighing, secure system by use of seals, locks, control board lockouts, or other approved means. Correct for spills and certify according to instructions in Chapter 2 of the Weighing Handbook.

a. General Loading Operation Guidelines

(1) Pre-loading Responsibilities

(a) Secure elevator's scale and delivery system and clear it of all grain prior to weighing operations. Examine seals, locks, and/or gate indicators to verify their working condition. Complete preweighing checks listed in Section 1.4.

(b) Perform a required stowage examination on land and export waterborne carriers, and at the applicant's request, on domestic waterborne carriers. Follow official inspection stowage examination procedures exactly.

(2) Loading Responsibilities

(a) Follow scale operation procedures in Section 1.4 for weighing grain to the carrier.

(b) Maintain grain flow security with methods specified in Section 1.5.

(c) Prevent addition to or removal of material through cleaning, drying, or other processing of the grain en route to the carrier unless allowed by regulation or applicable instructions.

(3) Post-loading Responsibilities

(a) Examine the grain handling system by visual or electronic methods for the correct distribution of weighed grain.

(b) Document spillage or lost grain as instructed in Chapter 2.

(c) Conduct a survey of the grain handling system at the completion of each export lot.

(d) Document loading of outbound carriers with scale tapes or tickets and, of ships with a Weight Loading Log, scale tapes or tickets, or FGIS approved methods.

b. Vessel Loading Requirements

(1) Sublot Determination and/or Verification

Determine the exact weight of each sublot or verify the accuracy of the weight as determined by elevator personnel and record on the Weight Loading Log.

(a) When there is direct correlation with the inspection sample (i.e., there are no surge or shipping bins between scales and mechanical samplers), follow these procedures:

1) Confer with elevator management to determine sublot size.

2) Keep a running total of drafts to determine the end of the sublot.

3) Inform both inspection and elevator personnel when a sublot completes.

4) Document the Weight Loading Log.

(b) When there is no correlation with the inspection sample (i.e., grain is held in surge or shipping bins after the scales but before the mechanical samplers), follow these procedures:

1) Establish a system to accurately determine the designated sublot size.

2) Make sublot determination except when practicality shows elevator personnel can best do this.

3) Develop and implement a procedure to verify the accuracy of the sublot determination system.

(2) Shipping Bin Examinations

(a) When the grain quality inspection takes place prior to grain being loaded aboard the carrier, examine each shipping bin for cleanout as it empties. Visual or electronic examination is acceptable.

1) Post the time when shipping bins are checked at the beginning and end of each lot or cutoff for a visual or electronic examination.

2) Verify accuracy of an electronic indicator and document according to procedures established by the manager and explained in the Facility Handbook.

(b) Deliver to the carrier or weigh back and account for by correction any grain remaining in a shipping bin after the lot is completed.

(c) At facilities where bins do not continually self-clean, and the remaining material does not meet the definition for grain or is substantially below load order quality:

1) Do not allow this material to be loaded.

2) Get bin design corrected or develop a procedure to estimate grain in this material and replace or deduct the amount from the certified weight.

3) Do not allow the return of contaminated grain to sound grain bins.

(3) Shipping Bin Reject & Returns

(a) Subtract from the total weight the amount of grain rejected and returned to the house because of grade, and record this on the Weight Loading Log.

(b) Draw a red line through the returned amount and show "R&R" on the log.

(c) Adjust and document scale tapes and tickets as "R&R".

(4) Discharging Grain from an Outbound Carrier.

(a) Determine grain amount to be removed.

(b) Ensure grain flow system is secure and clear.

(c) Monitor grain flow.

(d) Weigh grain and deduct the weighed amount from the net weight.

(e) Document all discharges and, at the applicant's request, issue a weight certificate for discharged amount (see Chapter 2).

(5) Weight Cutoff During Loading Operation

(a) At the applicant's request, stop weighing, deliver grain to the carrier, and certify the amount delivered.

(b) Include only the amount of grain on the carrier; do not include grain weighed but not delivered, e.g., grain in shipping bins.

(c) Re-weigh the bins and subtract the amount from the total if the amount of grain in the shipping bins at the time of cutoff is unknown.

(6) Sealing Shipping Bins

Whenever official personnel leave the elevator, they must secure shipping bins containing weighed grain by using seals, locks, or electronic security methods.[4] If, upon returning to the elevator, they believe the grain security voided and the quantity changed, they must return the grain to the house and follow these procedures:

(a) When the exact amount of grain in the shipping bin is known, subtract that weight amount from the net weight loaded on the vessel.

(b) When the amount of grain in the shipping bin is unknown, subtract the total capacity from the net weight loaded on the vessel.

(c) Document the Weight Loading Log

The use of locks on the bottom of shipping bins prevents the grain security from being voided.

c. Barge and Container Guidelines

[4]These sealing provisions provide for sealing grain flow to maintain quantity. The sealing of access openings to control the addition of sweepings or other grain is at the manager's discretion.

(1) Seal Requirements for Outbound to Export Carriers

(a) If shippers request an export certificate identifying the ocean carrier at the time of loading, i.e., containers, lash barges, etc.:

1) Seal the inland carrier.

2) Record seal numbers on the weight certificate.

3) Use identification of inland container.

4) Mark certificate "out" movement.

(b) On loading the domestic carrier aboard the vessel, the local office will:

1) Obtain all certificates--original and copies.

2) Check seals.

3) Re-weigh the carrier if seals are not intact.

4) Checkload the carrier aboard ocean-going vessel.

5) Issue export certificate with identification of ocean-going vessel and net weight of the carrier loaded, or for a combined-lot certificate, the combined net weight with the other carriers loaded.

(c) When the shipper does not request the identification of an ocean carrier on the export certificate, seals are unnecessary.

(2) Seal Requirements for Outbound to Domestic Carriers

When the shipper applies seals and requests they be shown on the weight certificate:

(a) Verify seal numbers.

(b) Record seal numbers on weight certificate.

(3) Documentation for Outbound Barges

(a) Scale tapes or tickets are required.

(b) Managers may require additional documentation.

d. Outbound Railcar Guidelines

(1) Loading Single Railcars, Unit Trains and Combined Lots.

(a) Weigh individually, collectively as a unit train, or batch-weigh as a combined lot.

(b) Certify following procedures in Chapter 2.

(2) Recording Seals at Applicant's Request.

(a) Verify proper application of seals using procedures in 1.2.

(b) List seal numbers in "Remarks" section of weight certificate.

(3) Documentation Requirements

(a) Use scale tapes or tickets.

(b) Obtain list of railcar identification numbers for certification for unit trains and combined lots.

e. Procedures for Outbound Trucks Weighed on Platform Scales

(1) Establish consistent policy of either weighing drivers/riders on or off scales.

(2) Obtain gross weight: weigh full vehicle exactly as empty vehicle was weighed for tare weight (i.e., same riders or accessories).

1.4 SCALE OPERATION

Knowledge of weighing systems by official personnel is essential for certification of weights. Specifically, this includes familiarity with the parts of each system, proper use of weighing systems, knowledge of procedures to be followed and of signs of system breakdowns. If the performance of the scale is questionable, the weigher must notify the supervisor and, if necessary, the scale official.

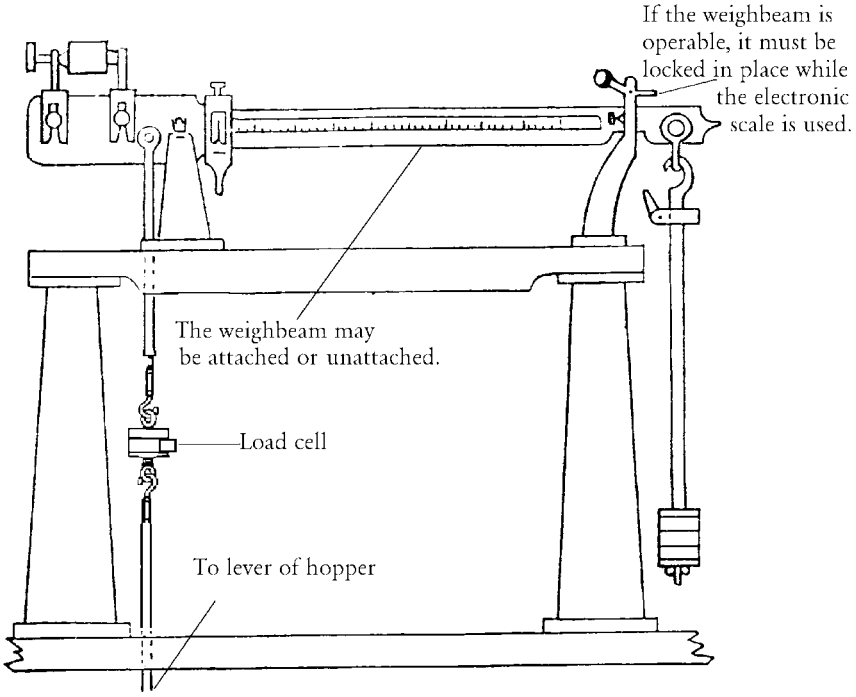
a. Electronic Weighing Systems

(1) General Description

An electronic weighing system includes a load receiving element, and indicating element, a printer, and the associated material handling equipment. The load cell(s) senses the amount of applied load in the load receiving element and produces an output voltage that is sent to the digital instrument. The digital instrument converts the output voltage into a digital display. The tape printer records the digital display to a tape or ticket for a permanent record. Resolve any problems with the supervisor and, if necessary, with the scale specialist.

(a) There are two types of electronic scales.

LEVERTRONIC SCALE

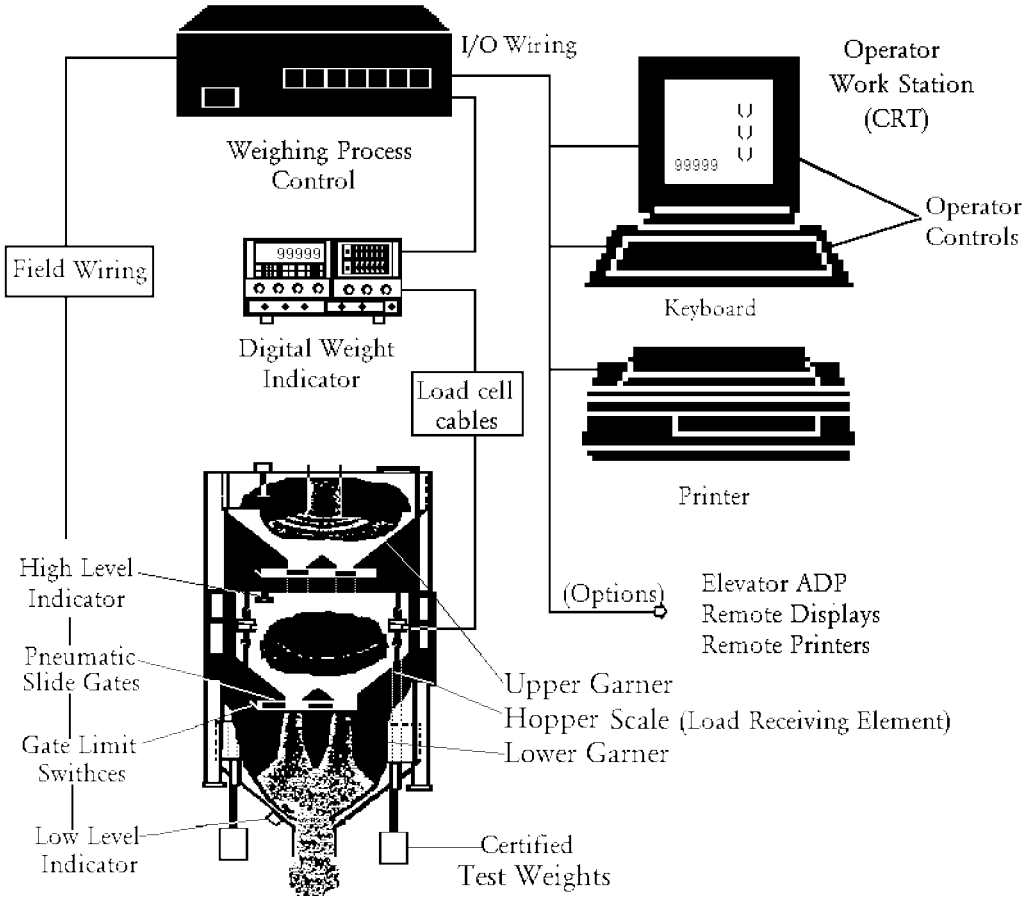


1) Levertronic Scale

Converted from mechanical scale by the insertion of a load cell into the lever system.

Digital instrument and printer usually replace weighbeam or dial.

FULL ELECTRONIC SCALE



2) Full Electronic Scale

Full electronic scales have load cells directly supporting the load receiving element.

Personnel control levertronic or full-electronic scales either in or out of the elevator, this area, the control room, contains digital instruments, printers, and control board monitors.

a) Official remote digital instrument displays (CRTs) and printers can be approved.

b) Digital instruments have a process control that allows operators to control grain flow into and out of garners and scales manually or by automatic mode. In the automatic mode, the scale fills and empties (cycles) by itself; manually, the operator controls the cycling of each draft.

Operators monitor grain flow from control boards or monitors that designate scaled diagrams of the elevator's grain handling system. Elevator personnel can control bin selection, tripper movement, diversion points, legs, conveyor belts, and slides/gates with switches on the control board.

(2) Pre-weighing Responsibilities

At the beginning of each work shift, the weigher must:

(a) Ensure the load receiving elements of the scale components are free from binds, obstruction, and debris; that the load cells and wiring are intact; and that all scale components are free from build-ups of grain.

(b) Ensure that there is a warmup period for the load cells and electronic units. One-half to one hour is required when power has been shut off to the scale.

(c) Examine the Scale Record Log to determine whether a malfunction occurred in the weighing system during the previous work shift. Resolve any problems with the scale official before using the scale for official weighing.

(d) Observe the digital display in an empty scale condition. If the weight value fluctuates in excess of plus or minus one division, determine if it is the result of a scale malfunction. No-load balance is a condition in which the scale will record a representation of zero load when the scale is empty.

(e) Establish for reference the operating tare. Tare is the reference amount that represents an empty scale condition; it is usually printed as a negative value on the scale tape. If the tare goes below zero:

1) The weighing cycle may stop.

The weight display will display below zero and print a positive tare. Net weight is obtained by subtracting (or adding if below zero) the tare weight from the gross weight.

2) Perform any other tests built into the weighing system which identify equipment problems (e.g., calibration check, printer check, LED display check, etc.), inform the supervisor, and consult the scale official as necessary.

(3) Electronic System Operating Procedures

(a) Ensure proper system operation and detect any printer malfunctions.

(b) Verify that the weight display value on the digital instrument is identical to the printed value on the scale tape or ticket.

(c) Document checks on scale tapes as instructed by manager.

(d) At the end of the sublot or pre-determined interval, total and record the sublot or tape number.

(e) Record the date, time, carrier identification, kind of grain, and scale number.

(f) Show the calculated net weight if it has to be manually calculated from a running total or verify the accuracy of the information.

(g) Initial the tape.

(4) Checks Performed During Each Work Shift

(a) Examine the garner gate and weigh hopper gate for leaks. Discontinue the use of the scale if a leak is found until it is corrected. Document on the Weight Loading Log, scale tapes, scale record logs, an event printer, as determined by the manager. Perform the check as follows:

1) With the garner at least 50 percent full, all gates closed, and the scale operation stopped; observe the digital display for a continuing increase in weight. An increase indicates that grain is leaking from the upper garner into the weigh hopper.

2) With the weigh hopper at least 50 percent full, all gates closed, and the scale operation stopped; observe the digital display for a continuing

decrease in weight. A decrease indicates that grain is leaking from the weigh hopper.

(b) Examine the gross weights from previous drafts printed on the scale tapes. If the grain flow to the scale is constant, the gross weights are constant. Large variations during automatic operation must be investigated by the scale official for a possible malfunction in the weighing system.

(c) Printed tare weights cannot vary more than two divisions.

1) Changes that do not necessarily indicate inaccurate weights:

a) Occasional increases that return to normal may indicate that material was struck in the weigh hopper for a brief period of time.

b) Gradual long-term increases may result from build-up on the scale structure or a temperature change. These do not necessarily indicate inaccurate weights.

2) Erratic changes or gradually decreasing tare weights must be investigated.

(d) During the print cycle, when the gates are closed, the digital display must settle to plus or minus one division prior to printing. A motion detection design, approved through the prototype and through initial installation examinations, senses the proper settling of the scale.

(5) Specific Situations Requiring Caution

(a) Design specifications on electronic hopper scales used for inbound weighing require that the tare weight is determined and printed at the beginning of each draft to reflect that the scale was empty when weighing began. Design specifications on scales for outbound weighing require that the tare weight is determined and printed at the end of each draft to reflect that all of the draft was delivered to the carrier.

1) Some scale models can change from one mode to the other simply by selecting the weighing sequence. Changing the weighing sequence while grain is in the weigh hopper and a draft is in progress can cause inaccurate results in the scale's total net weight accumulator. For example, when a carrier is being weighed in and is being directly transferred to export, there exists potential for this situation to occur. Often times the whole carrier is not used and many transfers and changes of mode of operation and weighing sequence occur. Weighers are to allow changes in weighing sequence only between carriers or a complete weighing cycle (a tare and gross).

2) Scales to weigh inbound may be used to weigh outbound if the scale is manually cycled while the scale is empty and by printing a tare and gross at the end of the weighing cycle. If scales to weigh outbound are be used to weigh inbound, specifically when shipping scales are used to weigh rejected grain back to the house and when shipping scales are used to weigh inbound grain, perform the procedure before the weighing cycle begins.

(b) Certified capacity of a scale is the maximum weight limit that has been approved for that scale and, along with the minimum division size, it must be conspicuously displayed on the front of the digital instrument. If draft weight exceeds certified capacity, do not certify the excess. For overdrafts, follow these procedures:

1) For outbound or export grain, the elevator may option to return grain to the house until the amount in the hopper is at or below certified capacity, or certify the weight of grain up to certified capacity.

2) For inbound grain, the elevator must discharge grain from the overloaded hopper until the amount in the scale is at or below certified capacity. Weigh the remaining grain in the hopper. Weigh the discharged grain. Add the net weight to the total net weight of the draft. If it is impossible to re-weigh the grain, certify the weight to certified capacity and place a qualified statement on the certificate indicating the number of drafts which exceeded certified capacity (see Chapter 2).

(c) Do not retain grain in the scale hopper beyond the normal operating cycle time except for emergencies, such as trimming a load or carrier cleanout. Consult the scale official if elevator management regularly requests retaining grain in a hopper.

(d) Limited access areas digital electronic scale instruments, including the manual printer, must always be sealed.

(e) Verify the remote tape with any other printer tapes three to four times per shift when it is the official tape.

(f) Where there is no battery backup and a power loss occurs, use one of the following procedures when the power is restored:

1) If an accumulated total is stored in the mechanical printer; weigh any grain remaining in the hopper, clear (total) the tape and add the drafts beginning with the last subtotal before the power loss, verify the total with the accumulated total registered by the printer, notify the supervisor of discrepancies, and document the situation.

2) If the accumulated total is stored in the electronic digital memory: calculate the tape manually to get the total, clear the printer, document the situation, and resume weighing.

(g) Precycling is the interruption of a normal weighing cycle to prevent the scale from completely filling the weigh hopper. Precycling will cause the tare weight to be abnormally high or the gross weight to be abnormally low, depending on when the precycling was initiated. Precycling must not be regularly allowed but is infrequently acceptable during emergency conditions such as the overfill of the upper hopper. Weighers must initial or explain these instances on the tape. At facilities where the upper garner often fills before the scale is ready to cycle, managers must provide procedures in the Facility Handbook explaining when precycling is condoned. (Such instructions may negate the requirement to initial all precycles.)

(6) Handling Malfunctions

(a) Any occurrence resulting in inaccurate or unverifiable weight information is a malfunction. A malfunction in any part of the electronic weighing system, regardless of its location, may adversely affect the entire weighing system.

(b) The weigher is neither responsible for determining the specific cause of a malfunction, nor for trouble-shooting the system, but is responsible for determining the accuracy of the results. Weighers must recognize the malfunction as it occurs, inform personnel responsible for identifying and correcting the malfunction, document the situation, and certify the weight according to Chapter 2.

(c) When the weight of the grain is questionable due to a malfunction, re-weigh the grain if possible. If the grain cannot be re-weighed, carefully consider every factor before certification. If the weigher and supervisor discontinue the use of the scale, the scale official determines when to resume using it. Record on the scale tape, Weight Loading Log, and Scale Record Log the date, time, and nature of the malfunction, and whether use of the scale was discontinued.

(d) Four areas in the weighing system where malfunctions occur are: 1) the operator; 2) the digital instrument; 3) the printer; and 4) the weighing mechanism.

(e) Weighers recognize malfunctions in electronic weighing systems by analyzing and understanding alarm or error messages on weighing system displays and printed messages. Messages vary with systems. Consult supervisors, Facility Handbooks, or manufacturer's operating manuals to be knowledgeable about the terminology. (Customized terminology used in process controls or other grain handling system controllers must be defined and explained in the Facility Handbook.)

(f) Operator errors cause some system malfunctions. Official personnel must know the manufacturer's operating procedures, evaluate the affect of errors on weight information, and make proper corrections. Improper use causes malfunctions that are not evident until after the error has been made, can occur any time during the weighing that involves the operator, and can have varying affects on printed weight totals. Proper observation of elevator operators by official personnel avoids or quickly rectifies operator errors.

(g) Continual use and unfavorable environmental conditions can have a detrimental affect on digital instruments. A breakdown within the instrument may affect the whole system. This instrument may control gates, printers and load cells, and it may receive signals from this equipment, including the first

indications of malfunctions in the equipment. Possible cause of the malfunction in this equipment is the digital instrument.

1) When a malfunction occurs and the weigher questions the accuracy of a digital instrument, the weigher must:

   a) Inform elevator personnel, supervisor, and scale official immediately.

   b) Cease all official weighing on the unit in question.

   c) Thoroughly document on appropriate tapes both the malfunction and subsequent action.

2) Common digital instrument malfunctions.

   a) Failure of the system to start, stop, or operate automatically.

   b) Printed weight totals, gross weights, and/or tare weights are incorrect or different from digital displays.

   c) Indicator lights cease to function or provide false readings.

   d) Digital display readout is illegible or incomplete.

   e) Control button switches are ineffective or work improperly.

   f) Digital display shows the filled or empty hopper is not settling.

(h) The printed tape is an official record of all weighing. Discontinue official weighing unless all the printed information is legible and accurate. Corrective action depends on the severity of the malfunction and can range from adjustment to replacement.

1) Common printer malfunctions.

a) Printovers because the paper is not advancing.

b) "Stretched" or illegible information because the paper advances while printing.

c) Lost print because the ribbon or printing element malfunctions.

d) Nonsense characters print.

2) Verify the flow of grain through the scale, when a printer malfunction occurs. The accumulated total can often be used for certification. (See auto-printing malfunctions in Section 2.4.)

3) Manually record the gross, tare, and net weight from the digital display on the digital instrument, if the printer stops. The supervisor decides when to allow official weighing in the manual mode. Note the circumstances on the scale tape.

(i) Scales are regularly tested to detect weigh system problems and to adjust or modify the equipment. Possible malfunctions in the load receiving element are:

1) Gates cease to function properly allowing scales to exceed capacity or leak;

2) Holes in the garner or weigh hopper allow grain to escape the system without being weighed;

3) Levers bind affecting the weighing accuracy of the scale; or

4) Load cell malfunctions.

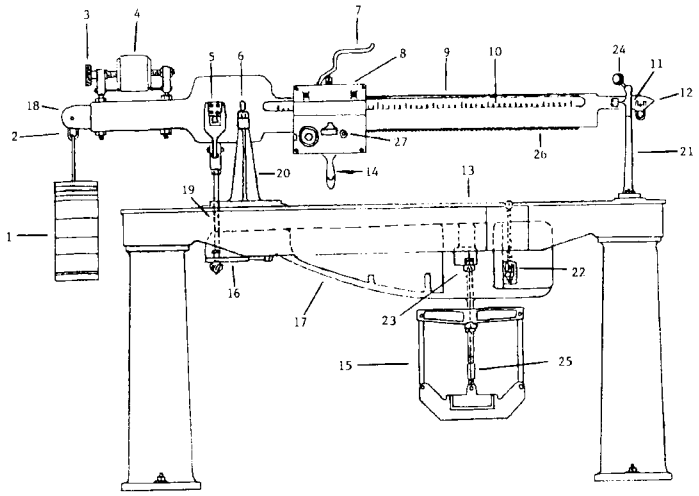
(j) Report repair work performed on the system's lever or load cells to the scale official to determine if testing is necessary.

b. Mechanical Type-Registering Weighbeam Scales

(1) General Description

Mechanical scales are either full capacity type-registering weighbeam or counterpoise type-registering weighbeam. The load receiving element (i.e., the weigh hopper and lever system) transfers the applied load (i.e., the weight of the grain) to the weighbeam, which contains apparatus to balance the scale and print the weight.

(a) There are two types of mechanical scales.



FULL-CAPACITY TYPE-REGISTERING WEIGHBEAM SCALE
Full-Capacity Weighbeam Parts List

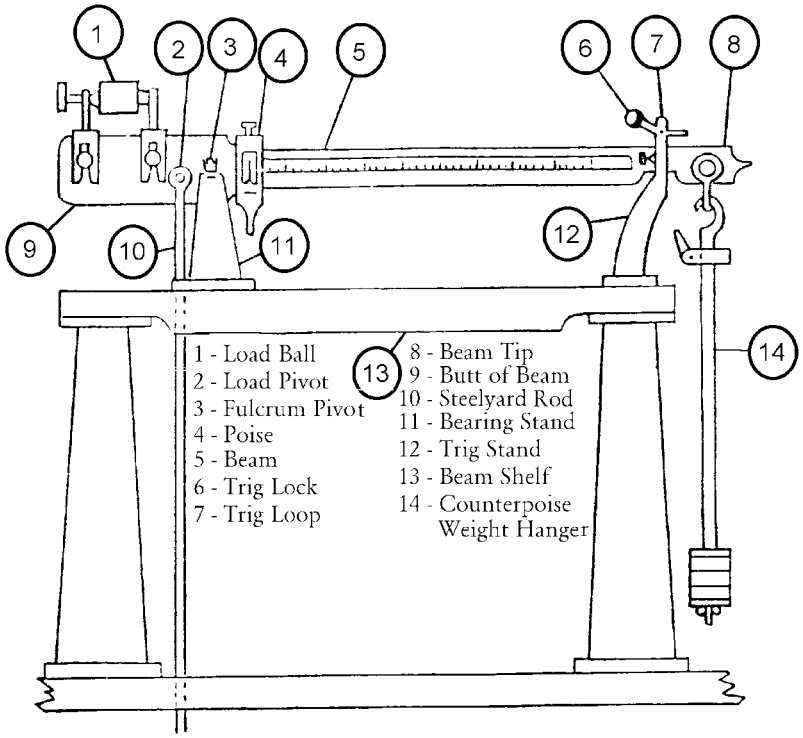
1. Counterbalance weights
2. Back balance loop
3. Balance ball knob
4. Balance ball
5. Final load pivot
6. Fulcrum pivot
7. Pawl handle
8. Recording beam poise
9. Weighbeam
10. Graduated bar
11. Trig loop
12. Beam tip or point
13. Beam shelf
14. Recording or printer loop
15. Shackle assembly
16. Nose iron assembly
17. Shelf lever
18. Beam butt
19. Beam rod
20. Beam stand
21. Trig stand
22. Fulcrum pivot
23. Load pivot
24. Trig lock
25. Steelyard rod
26. Type bar
27. Fractional poise

1) All weight is registered through the use of main and fractional poises.

   a) Fractional poises register less than 1,000 pounds.

   b) Thousands are registered by moving the main poise horizontally along the length of the weighbeam.

COUNTERPOISE TYPE-REGISTERING WEIGHBEAM SCALE



2) Counterpoise Type-Registering Weighbeam Scale

   a) Registers less than 1,000 pounds through horizontal movement along the weighbeam.

b) Registers thousands of pounds by placing counterpoise weights on the counterpoise weight hanger at the end of the weighbeam.

c) Punch the scale twice: Once for the thousands, and a second time for less than 1,000 pounds.

(2) Pre-weighing Responsibilities

(a) Ensure the lever system and load receiving elements are clean, and the scale components are free from binds, obstructions, and debris.

(b) Examine the Scale Record Log to determine whether a malfunction occurred in the weighing system during the previous work shift. Resolve any problems with the scale official before using the scale for official weighing.

(c) Balance the empty scale and maintain the balance while weighing continues. Verify the zero-load balance at least twice per shift or when resuming weighing after absence from scale. (The scale must be empty with no scale tickets in the poise.)

1) Balance a full capacity weighbeam scale by first setting the poises to zero, and then moving the balance ball to a position that attains correct zero balance. The weighbeam, when released at the top or bottom of the trig loop, must swing freely in the trig loop at an equal distance from the top and bottom, decreasing with each swing until it eventually comes to rest in the center of the trig loop. Where a balance indicator is used, the single indicator must swing an equal distance from and come to rest at the center of the graduated scale or central target area.

2) Balance a counterpoise type registering weighbeam by removing or releasing the counterpoise weights, setting the main poise to zero, and holding the weighbeam at the bottom or top of the trig loop and releasing. The weighbeam must swing freely from the top of the trig loop to the bottom and come to rest in the center. Adjust the balance ball to achieve a correct balance if necessary.

(3) Scale Operation Duties

(a) Recording Procedures

1) When the scale reaches draft weight, adjust the poise(s) and counterpoise weights as necessary to balance the beam.

2) Record the weight of each draft after obtaining the load balance and before moving the poise or removing the load from the weigh hopper.

3) Verify that the correct load balance for each draft is obtained, and that the printed weight on the scale ticket matches the weight value represented by the main poise or fractional poise and counterpoise weights position.

4) Operate the weight printing device while the load is on a correctly balanced scale.

5) Write in the correct weight and initial the correction if the printed weight value is unclear or incorrect.

6) Do not obtain the load balance while the scale ticket is in the poise.

(b) Operate Scale

1) Verify scale cleanout after each draft is balanced, the weight properly recorded, and the grain released from the weigh hopper.

2) Return the poise to zero and release the counterpoise weights.

3) Check the weighbeam when the draft runs out to verify that it is moving freely within the trig loop and the weigh hopper is completely empty.

4) Visually observe the inside of the weigh hopper for emptiness where counterpoise weights are not easily released or in other approved situations.

(c) Record weights of drafts with scale tickets when using a mechanical scale.

1) Draft weight is impressed on the ticket.

2) Write in and initial the correct weight when the ticket printer prints illegibly.

3) If illegible due to malfunction of the printer bar, notify the supervisor who notifies facility management.

4) Scale tickets must be numbered consecutively for accountability.

5) First and last scale tickets of a lot or sublot must show: draft weight, authorized or licensed weigher's initials, date, identification of grain (carrier), kind of grain, and scale number.

6) Remaining tickets need draft weight, scale number, and licensed or authorized weigher's initials.

7) Observe the balance of the beam for every draft for weighbeam scales.

8) Do not accept scale tickets for drafts not verified as weighed or not weighed.

9) For individual carrier (truck, railcar, etc.), enclose the scale ticket with or attach it to the agency copy of the appropriate certificate.

10) For multiple draft carrier, retain the scale tickets at a central secure location with other weighing documentation.

11) Calculate total pounds at the end of each cutoff or sublot and enter that weight on the Weight Loading Log.

12) Retain scale tickets for 5 years.

(4) Weighing Operation Checks

Perform the following procedures during each work shift, and if the scale's performance is questionable, notify the supervisor and, if necessary, the scale official.

(a) Check for required sensitivity a minimum of twice per shift.

1) Ensure that the interferences, weighbeam friction, or other factors do not impair sensitivity.

2) Moving the fractional poise two minimum divisions should cause the weighbeam to come to rest at the bottom of the trig loop, when the scale is balanced with the weighbeam at the center of the trig loop.

3) Changing a balance indicator one division when balanced, should cause a movement of at least ¼ inch or at least one division on the graduated scale (or the width of the central target area) whichever is greater.

(b) Examine the garner and weigh hopper gates for leaks on systems with hoppers.

1) Garner check: With the garner at least 50 percent full and all gates closed, stop the weighing cycle and balance the weighbeam. If the weight on the poise must be continually increased in order to maintain a balance, grain from the upper garner is leaking into the weigh hopper.

2) Weigh Hopper check: With the weigh hopper at least 50 percent full and all gates closed, stop the weighing cycle and balance the weighbeam. If the weight on the poise must be continually decreased in order to maintain a balance, grain is leaking from the weigh hopper.

3) If a leak is found do not use the scale until the system has been repaired and document the gate leak check on the Weight Loading Log.

(5) Specific Situations Requiring Caution

(a) The maximum weight certified or approved by FGIS for official weighing is the certified capacity and must be conspicuously displayed on the front of the weighbeam shelf. An overdraft occurs when grain fills the weigh hopper beyond its certified capacity. For overdrafts follow these procedures:

1) For Outbound or Export Grain, the elevator at its options may:

a) Return grain to the house until the amount remaining in the hopper is at or below the certified capacity of the scale and then have the remaining grain weighed; or

b) Have the weight certified for only the certified capacity of the scale. Do not certify a weight in excess of the scale's certified capacity.

2) For Inbound Grain:

a) Grain must be discharged from the overload hopper until the amount remaining in the scale is at or below the certified capacity;

b) Weigh the grain remaining in the hopper;

c) Weigh the discharged grain and add the net weight to the total weight of the draft; and

d) Certify the weight to the certified capacity and place a qualified statement on the certificate showing the number of drafts which exceeded the certified capacity, if it is impossible to re-weigh the grain (see Chapter 2).

(b) Any change in the poise weight seriously affects weighing accuracy. The poise of a weighbeam scale is carefully adjusted and sealed to a definite weight at the factory. Periodically check to see that no material is added to or removed from a poise.

(c) Sources of weighing error include foreign objects or loose material in the form of nuts, bolts, washers, or other material on any part of the weighbeam assembly, including the counter-balance hanger.

1) Loose balancing material must be enclosed in the shot cup of the counter-balance hanger.

2) Counter-balance weights must not be the slotted type which can readily be removed.

(d) Stops are provided on scale weighbeams to prevent movement of poises behind the zero division when balancing or weighing. If the stops become worn or broken and allow the poise to be set behind the zero position, report the condition to the supervisor.

(6) Handling Malfunctions

(a) When the accuracy of the amount of grain is questionable, re-weigh the grain if possible.

(b) If the grain cannot be re-weighed, carefully consider every factor before certification.

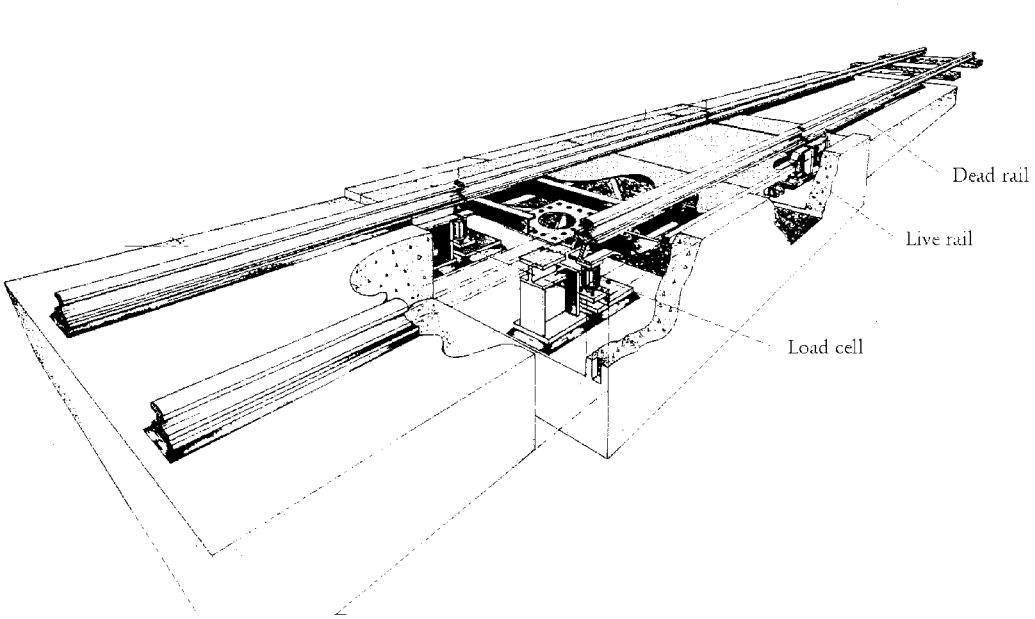
(c) If the weigher and supervisor discontinue the use of the scale, the scale official determines when to resume using it.

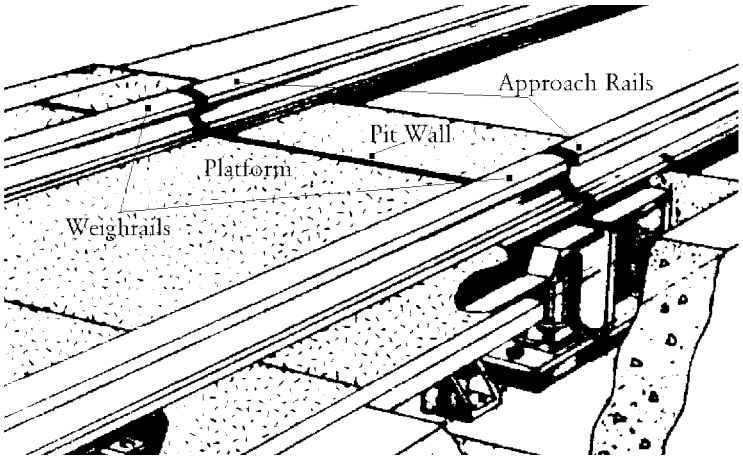
(d) Record on the scale tape, Weight Loading Log, and Scale Record Log, the date, time, and nature of the malfunction and whether the use of the scale was discontinued.

(e) Notify the supervisor or scale official when a scale has been adjusted (other than for zero balance) to determine if the scale requires retesting.

(f) Do not use the scale, if retesting is required, until the scale official approves it for use.

c. Railway Track Scales





(1) General Description

Procedures for balancing and operating the scale (electronic or manual) are explained earlier in this section. Procedures specific to the scale design follow. Seek approval from a scales official before weighing loads other than railcars on a railway track scale.

(2) Specific Requirements

(a) Inspect the levers, load cells, and scale pit for excessive grain debris or water build-up. Do not enter scale pits in confined work areas.

(b) Before balancing the empty scale, the scale platform must be free from interference or binds.

(c) An adequate clearance not less that 1/8 inch or more than 5/8 inch between the approach rails and weighrails must exist.

(d) No preset tare is used; *the scale must balance at zero* after each weighing (regardless of whether weighing is done on manual or electronic scales.)

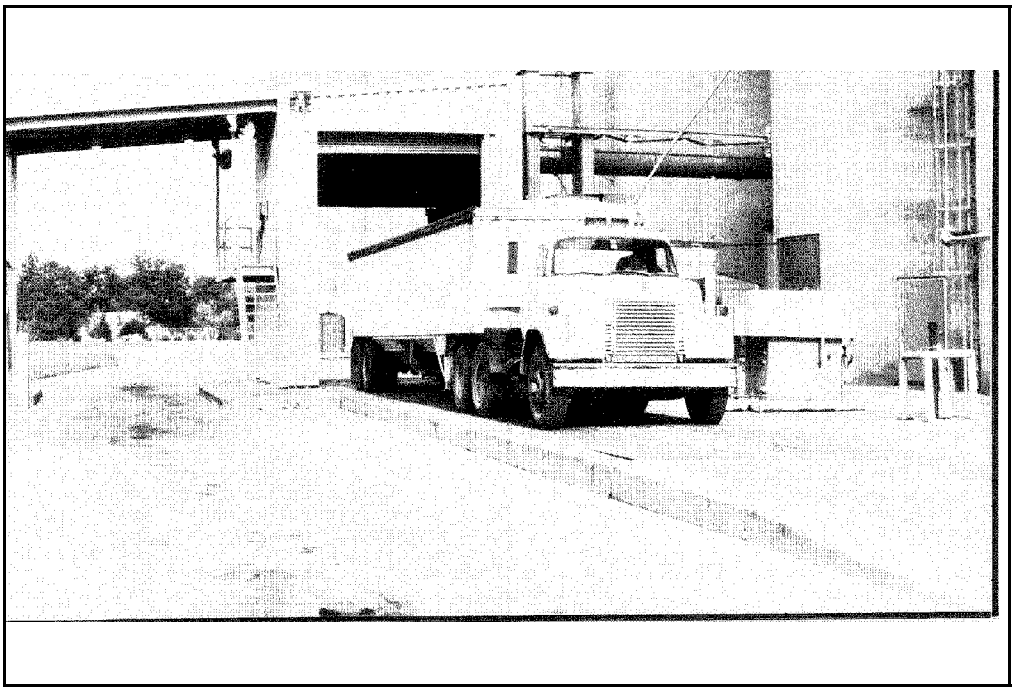
(e) Obtain the gross weight of a railcar in one weighing.

1) Ensure that the railcar is uncoupled at both ends and that all wheels are on the weighrails when the railcar is weighed.

2) In-motion weighing must be permitted only where scales have been approved for it.

(f) Obtain a correct tare weight of the unloaded railcar by weighing an empty car with all the grain doors, lumber, or other cooperage materials on the scale when the gross weight was obtained. (Do not use pre-determined or stencilled tare weights for empty railcars.)

VEHICLE/TRUCK SCALE



d. Vehicle/Truck Scales

(1) General Description

Procedures for balancing and operating the vehicle scale (electronic or weighbeam) are explained earlier in this section. Procedures specific to the scale design follow. Seek approval from a scales official before weighing loads other than vehicles on a vehicle scale.

(2) Specific Requirements

(a) Inspect the levers, load cells, and scale pit for excessive grain debris or water build-up. Do not enter scale pits in confined work areas.

(b) Check that there is adequate clearance -- 3/8 inches between the scale platform and pit walls.

(c) Periodically rebalance vehicle scales to zero, when the scale does not automatically reset itself to zero.

(d) Do not balance the scale during the weighing cycle of a truck.

(e) Obtain the gross weight of a tractor trailer or truck trailer in one weighing using vehicle scales.

(f) Obtain a correct tare weight of the unloaded vehicle by weighing the empty trailer with the same riders and truck accessories on the scale as when the gross weight was obtained.

(g) Do not use pre-determined tare weights for empty vehicles.

(h) Follow a consistent established policy of either weighing drivers and riders on or off the scales.

(i) Where the truck leaves the scale between the gross and tare weights, or the gross and tare weights are taken on different scales:

1) Check the zero balance every 30 minutes;

2) Notify the supervisor and scale official if the scale does not hold the zero balance for two consecutive checks; and

3) Continue to use the scale unless it malfunctions.

1.5 GRAIN FLOW SECURITY

Grain flow security is critical to the grain weight certification process. For official weighing of inbound grain, official personnel must ensure grain security from the unloading of the carrier to the completion of the weighing. For outbound grain movements, official personnel are responsible for correct weighing and for the secured movement of the grain from scale to carrier. A weight certificate attests to a known weight of grain in an identifiable carrier. The certificate must be accurate.

a. Detecting, Estimating, and Recording Grain Spills

(1) General Responsibilities

(a) When grain is spilled during shipping operations, collect and return sound grain to the grain flow, estimate and add a like amount of grain to the flow, or estimate and subtract from the weight credited to the carrier.

(b) Estimate grain spilled during unloading or left in inbound carriers, and record the estimated weight with a qualifying statement in the remarks section of the weight certificate.

(c) Round grain spill estimates to the applicable minimum scale division size.

(d) Follow certification procedures in Chapter 2 for spilled grain and grain left in carriers.

(e) Accurately determine the weight of a spill using one of the following methods which are listed in order of preference.

1) Weigh the grain if possible.

2) Use the Grain Spill Estimation Charts or grain spill formulas.

3) Analytically estimate spills, i.e., the grain filled ten 100 pound grain sacks or a portable hopper was filled half-full and the hopper's normal capacity was known.

4) Any method which requires action by the elevator before the estimate is made usually requires constant supervision to assure the delivery of the grain, and therefore it is less desirable.

(2) Specific Responsibilities

(a) Use Grain Spill Estimation Charts (listed in Appendix A) for an easy, time-efficient, and reliable method of calculating grain spills.

1) Use the actual test weight if the spill is from a lot of grain that has been officially inspected. Multiply the volume (bushels or hectoliters) by the test weight, pounds per bushel or kilograms per hectoliter. Use the trade weight if the spill has not been officially inspected. (See Section (c) for trade weights.)

2) To measure spills as accurately as possible, estimate irregular shapes by using an average of several measurements taken at different points to calculate a radius, width, or height. Determine the volume of the measurements and record the amount on the documentation.. Mentally or physically form irregular spills into a shape that fits one of the formulas.

Measure irregular spills with the Grain Spill Estimation Charts as follows:

3) Rectangles

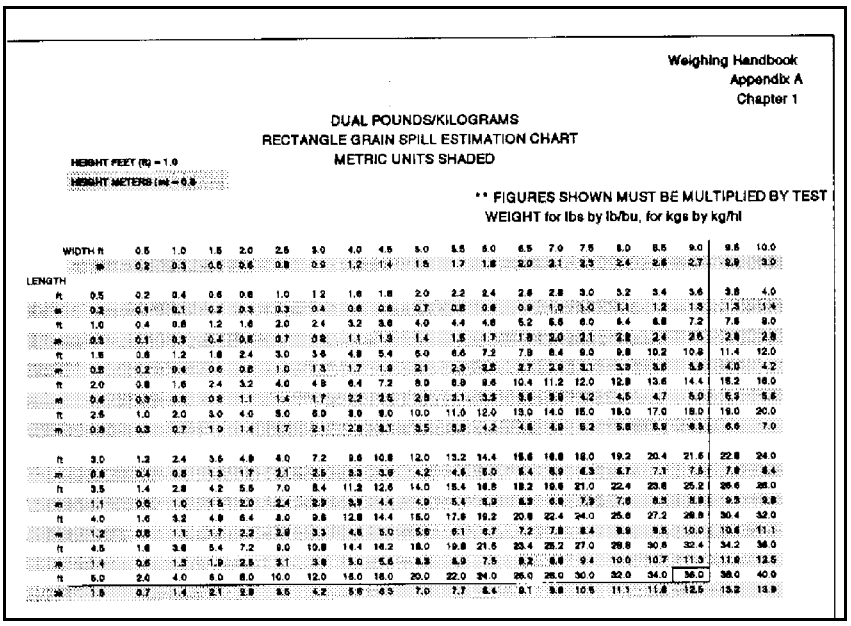
a) Locate the correct page by finding the proper height which is printed at the center top of the page.

b) Locate the correct width; widths are printed across the top of the page.

c) Locate the correct length; lengths are printed down the left side of the page. The volume figure is where the length figure and the width figure intersect.

d) Multiply the volume figure by the appropriate test weight per bushel to determine the weight of the spill.

e) Example: The following is an example of a spill that is rectangular with a height of 1.0 foot, a width of 9.0 feet, and a length of 5.0 feet.



Weighing Handbook
Appendix A
Chapter 1

DUAL POUNDS/KILOGRAMS
RECTANGLE GRAIN SPILL ESTIMATION CHART
METRIC UNITS SHADED

HEIGHT FEET (ft) = 1.0
HEIGHT METERS (m) = 0.3

** FIGURES SHOWN MUST BE MULTIPLIED BY TEST WEIGHT for lbs by lb/bu, for kgs by kg/hl

	WIDTH ft	0.5	1.0	1.5	2.0	2.5	3.0	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
	m	0.2	0.3	0.5	0.6	0.8	0.9	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	3.0
LENGTH																				
	ft	0.5	0.2	0.4	0.5	0.6	1.0	1.2	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0
	m	0.2	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.7	0.8	0.8	0.9	1.0	1.0	1.1	1.2	1.3	1.3	1.4
	ft	1.0	0.4	0.8	1.2	1.6	2.0	2.4	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	6.8	7.2	7.6	8.0
	m	0.3	0.1	0.3	0.4	0.5	0.7	0.8	1.1	1.3	1.4	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.8	2.9
	ft	1.5	0.6	1.2	1.8	2.4	3.0	3.6	4.8	5.4	6.0	6.6	7.2	7.8	8.4	9.0	9.6	10.2	10.8	11.4	12.0
	m	0.5	0.2	0.4	0.6	0.8	1.0	1.3	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.8	4.0	4.2
	ft	2.0	0.8	1.6	2.4	3.2	4.0	4.8	6.4	7.2	8.0	8.8	9.6	10.4	11.2	12.0	12.8	13.6	14.4	15.2	16.0
	m	0.6	0.3	0.5	0.8	1.1	1.4	1.7	2.2	2.5	2.8	3.1	3.3	3.6	3.9	4.2	4.5	4.7	5.0	5.3	5.6
	ft	2.5	1.0	2.0	3.0	4.0	5.0	6.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
	m	0.8	0.3	0.7	1.0	1.4	1.7	2.1	2.8	3.1	3.5	3.8	4.2	4.6	4.8	5.2	5.6	5.9	6.3	6.6	7.0
	ft	3.0	1.2	2.4	3.6	4.8	6.0	7.2	9.6	10.8	12.0	13.2	14.4	15.6	16.8	18.0	19.2	20.4	21.6	22.8	24.0
	m	0.9	0.4	0.8	1.3	1.7	2.1	2.5	3.3	3.9	4.2	4.6	5.0	5.4	5.9	6.3	6.7	7.1	7.5	7.9	8.4
	ft	3.5	1.4	2.8	4.2	5.5	7.0	8.4	11.2	12.6	14.0	15.4	16.8	18.2	19.6	21.0	22.4	23.8	25.2	26.6	28.0
	m	1.1	0.5	1.0	1.5	2.0	2.4	2.9	3.9	4.4	4.9	5.4	5.9	6.3	6.8	7.3	7.8	8.3	8.8	9.3	9.8
	ft	4.0	1.6	3.2	4.8	6.4	8.0	9.6	12.8	14.4	16.0	17.6	19.2	20.8	22.4	24.0	25.6	27.2	28.8	30.4	32.0
	m	1.2	0.5	1.1	1.7	2.2	2.8	3.3	4.5	5.0	5.6	6.1	6.7	7.2	7.8	8.4	8.9	9.5	10.0	10.6	11.1
	ft	4.5	1.8	3.6	5.4	7.2	9.0	10.8	14.4	16.2	18.0	19.8	21.6	23.4	25.2	27.0	28.8	30.6	32.4	34.2	36.0
	m	1.4	0.6	1.3	1.9	2.5	3.1	3.8	5.0	5.6	6.3	6.9	7.5	8.2	8.8	9.4	10.0	10.7	11.3	11.9	12.5
	ft	5.0	2.0	4.0	6.0	8.0	10.0	12.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0	36.0	38.0	40.0
	m	1.5	0.7	1.4	2.1	2.8	3.5	4.2	5.6	6.3	7.0	7.7	8.4	9.1	9.8	10.5	11.1	11.8	12.5	13.2	13.9

The volume for the spill is 36.0 bushels. If the spill from an officially inspected lot of soybeans has a test weight per bushel of 58.0, then the correct weight of the spill would be 2,088 pounds.

$$36.0 \text{ bushels} \times 58.0 \frac{\text{pounds}}{\text{bushel}} = 2{,}088 \text{ pounds}$$

4) Cones

a) Locate the correct page by finding the height figure for your spill. Height figures are printed in ½ foot (0.1 meters) increments across the top of the page.

b) Locate the correct radius. Radii are printed down the left side of the page. Find the volume figure for the spill where the radius figure and the height figure intersect.

c) Multiply the volume figure by the appropriate test weight to find the weight of the spill.

5) Constant Running Spill

a) To locate the correct page, find the correct feed in bushels or metric tons per hour (separate charts). These figures are printed across the top of the page.

b) Determine the correct time in seconds that the spill was occurring. These figures are printed along the left side of the table. The volume figure for the spill is located where bushels per hour and the time intersect. The metric ton chart is read the same except the figure derived is kilograms. Because this is not a volume, the figure does not have to be multiplied by the test weight.

(b) Use mathematical formulas if it is impossible to weigh the spill or to use the Grain Spill Estimation Charts.

1) Measure spills using a tape measure or a similar device.

2) Mentally or physically form irregular spills into a shape that fits one of the formulas.

3) Estimate irregular shapes by taking an average of several measurements at different points to calculate a radius, width, or height.

4) Convert any measurements in inches or centimeters to tenths or hundredths of feet or meters for these formulas.

5) The 0.8 bushel per cubic foot and 10 hectoliter per cubic meter constant factors in these formulas converts the cubic feet measurement to bushels, and cubic meters to hectoliters respectively.

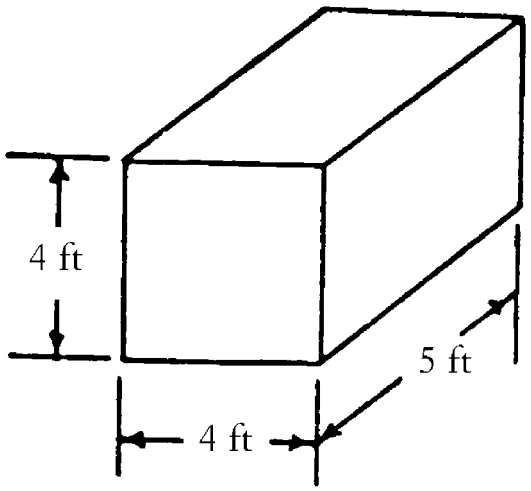
6) Multiply the bushels or hectoliters by the test weight of the grain to obtain the weight of the spill in pounds or kilograms.

7) Specific Formulas

a) Rectangular or Cube Formula

Length x Width x Height x 0.8 bu/ft^3 x Test Weight Per Bushel = Pounds

Example: Rectangular corn spill with dimensions as shown.



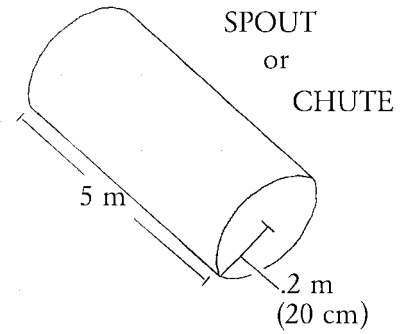
Answer: 5 ft x 4 ft x 4 ft x 0.8 bu/ft³ x 56 lb/bu = 3,584 lb
Round final weight figure to 3,580 lb

b) Cylindrical Formula

(In metric units m = meters, hl = hectoliters)

B(3.14) x r^2 x Height x 10 hl/m³ x Test Weight Per hl = Kilograms (kg)

Example: Cylindrical corn spill with dimensions as shown.

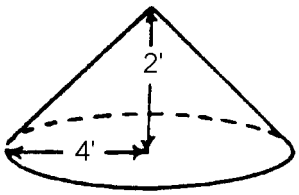


Answer: π x .2 m x .2 m x 5 m x 10 hl/m³ x 72.1 kg/hl = 4,528 kg.
Round final weight figure to 4,530 kilograms.

c) Cone Formula

$$\frac{\pi \times r^2 \times \text{Height}}{3} \times 0.8 \text{ bu/ft}^3 \times \text{Test Weight Per Bushel} = \text{Pounds}$$

Example: Conical soybean spill with dimensions as shown.



Answer: r^2 = (radius x radius). Radius = ½ diameter.

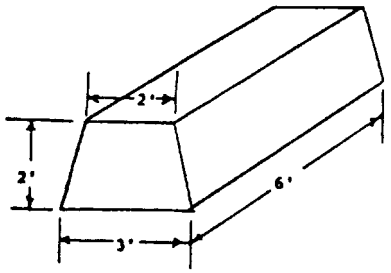
$$\frac{\pi \times 4 \text{ ft} \times 4 \text{ ft} \times 2 \text{ ft}}{3} \times 0.8 \text{ bu/ft}^3 \times 60 \text{ lb/bu} = 1607.7 \text{ lb}$$

Round final weight figure to 1,610 lb

d) Trapezoid Formula

$$\frac{(\text{Base} + \text{Top Width})}{2} \times \text{Height} \times \text{Length} \times 0.8\ \text{bu/ft}^3 \times \text{Test Weight/bu} = \text{Pounds}$$

Example: Trapezoid wheat spill with dimensions as shown (Visualize as an inverted conveyor belt).



Answer: $\frac{(3\ \text{ft} + 2\ \text{ft})}{2} \times 2\ \text{ft} \times 6\ \text{ft} \times 0.8\ \text{bu/ft}^3 \times 60\ \text{lb/bu} = 1{,}440\ \text{lb}$

e) Constant Running Formula

Spills may occur over water from shipping belts or spouts. If a spill is observed from the time it begins until the time it ends, estimate the entire amount of the spill. If only a part of a spill is observed falling into the water, estimate the observed amount. Determine flow rates by estimating or calculating the feed on the shipping belts. Determine the amount of grain that the belt can run at 100 percent feed and calculate the percent at which the belts were running during the spill.

Flow Rate (Pounds/Hour) x Running Time (Fraction of an Hour) = Pounds

Example: Corn spilling into the water for 3 minutes.
Flow rate on belt estimated to 50,000 bushels per hour, (2,800,000 Pounds per hour).

Answer: 2,800,000 lb/hr x 0.05 hr = 140,000 pounds
(or)
2,800,000 lb/hr x 3 minutes x 1 hr/60 minutes = 140,000 pounds

(c) Use Trade Weight Table to determine the test weight when the grain spill occurred from a flow of grain that was not officially inspected.

Grain	Pounds/Bushels (Trade Weight)	Kilogram/Hectoliter (Trade Weight)
Corn	56	72
Sorghum	56	72
Flaxseed	56	72
Rye	56	72
Wheat	60	77
Soybeans	60	77
Oats	32	41
Barley	48	62
Triticale	48	62
Sunflower Seed	28	36
Canola	50	64
Mixed Grain	32	41
Corn Screenings	44	57

(d) Pertinent Conversion Factors

Cubic Meter Conversion Factor

1 cubic meter = 10 hectoliters

Cubic Foot Conversion Factor

1 cubic foot = 0.8 bushel

Conversion of Hectoliters of Grain to Kilograms

Hectoliters x Test Weight kg/hl = Kilograms

Conversion of Bushels of Grain to Pounds

Bushels x Test Weight Per Bushel = Pounds

Conversion of Pounds to Tons

$$\frac{\text{Total Pounds}}{2{,}000 \text{ Pounds}} = \text{Short Tons}$$

$$\frac{\text{Total Pounds}}{2{,}240 \text{ Pounds}} = \text{Long Tons}$$

Conversion of Pounds to Metric Units

Total Pounds x 0.45359237 = Kilograms

$$\frac{\text{Kilograms}}{1{,}000} = \text{Metric Tons}$$

2,204.623 pounds = 1 Metric Ton

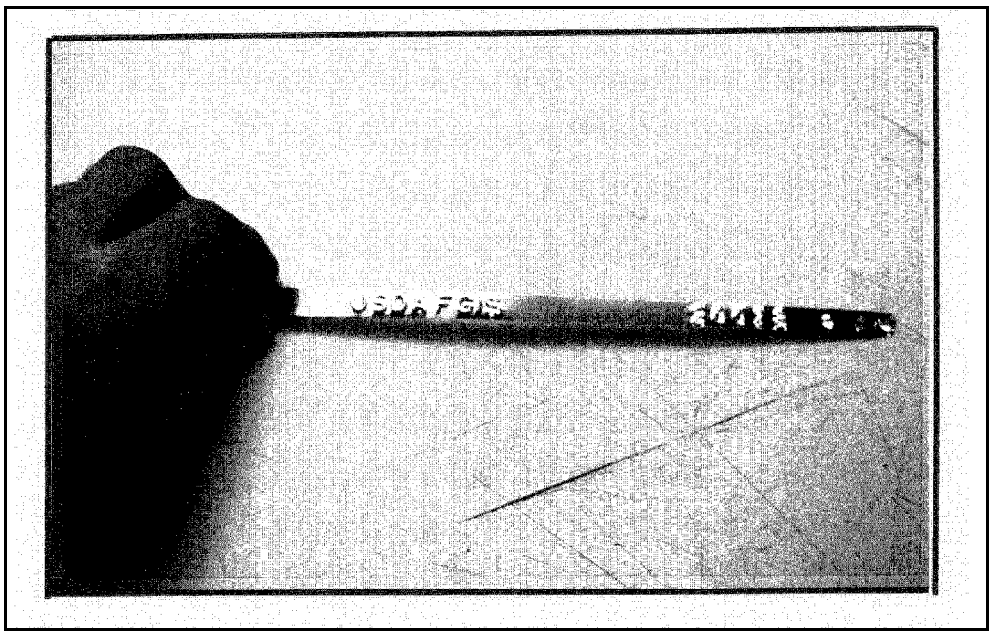
b. Diversion Points Controls to Ensure the Integrity of Grain Flow

(1) General Controls

Maintain security by using numbered railway strip seals, numbered padlocks, numbered cable seals, numbered wire seals, and electronic lockout (permissive) control devices. Multiple security devices may be required. Periodically check and record the number and placement of the seals and/or locks whenever any sealing system is used.

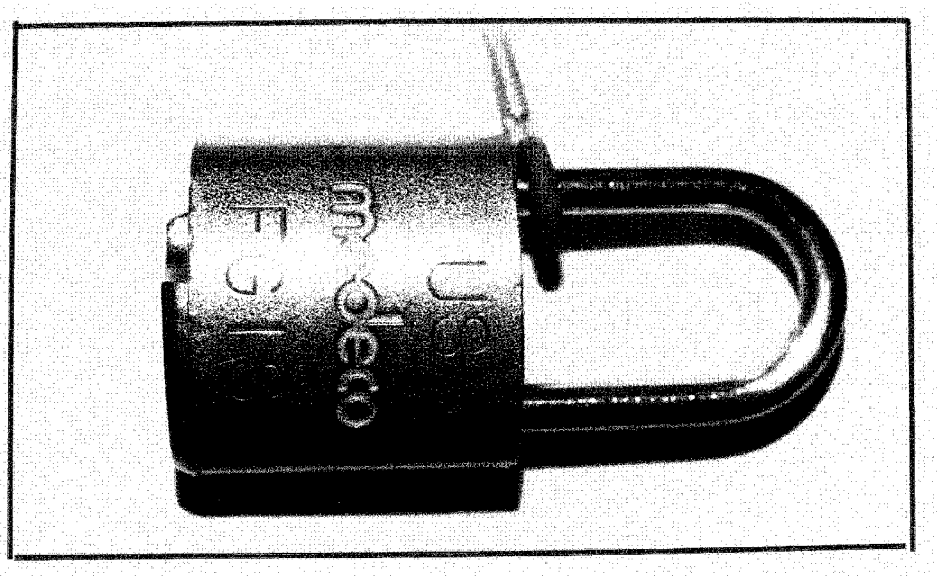
(2) Specific Controls

Railway Strip Seal



(a) Railway strip seals are sheet metal strips of approximately 6 to 8 inches in length that permanently lock when one end is inserted into the opposite end. They are impressed with numbers and/or letters which create an accountable record to prevent unauthorized breakage and unauthorized application of another seal. Although easily broken, the strip seal provides a means of securing grain flow. Prenumbered lead wire seals may be used in place of railway strip seals.

SECURITY PADLOCK



(b) Use padlocks in areas where greater physical security is needed, where security systems are frequently broken or tampered with, or when the reusability of security systems is advantageous. Permanently identify security padlocks with letters and numbers to create a unique identity for each padlock and record it in the Seal Log when a lock is either applied or removed.

1) Master keying systems can be established. One key opens a series of padlocks at a particular elevator and change keys open individual locks only. This system of keying provides security, flexibility, and ease.

2) Develop a system of key control to maintain the security of any padlock program.

(c) Use cable seals in areas where grain flow security is established on a permanent basis; they can only be removed by extreme force (e.g., hack saw, bolt cutters).

(d) Lockouts are incorporated in many control boards and can be used for maintaining grain flow security. Official personnel must:

1) Control the keys that operate the lockouts.

2) Verify and document biweekly to ensure that all indicating elements (lights) accurately depict the actual positions of diversion gates, turnheads, etc.

3) Verify export grain flow integrity on the Weight Loading Log every shift using an established facility checklist.

(e) Electronic lockout (permissive) control devices are provided at many facilities to monitor and ensure system security and grain flow integrity. In some facilities these lockouts are not electric panels and switches, but are programmable controllers or computers with visual displays. Lockout devices designate a switch or keyboard directly controlled by official personnel which, when activated, permit the movement of an elevator materials handling device, such as a gate or turnhead, from one position to another. Permissive devices ensure that grain flow patterns cannot be changed without official authorization. Check the lights or graphic depictions on these indicators biweekly.

(3) Unauthorized Seal or lock Breakage Procedures

When a seal or lock is found broken while grain is being officially weighed, the supervisor and the person having the most knowledge of the situation must find the cause of the problem.

(a) Answer the following questions:

1) When was the seal or lock last checked and found intact? Use the Seal Log to estimate the length of time that the seal or lock has been broken.

2) Can it be determined whether the breakage was accidental or deliberate, and did the grain flow remain secure during that time the seal or lock was broken?

3) Is this a constant problem at this grain elevator?

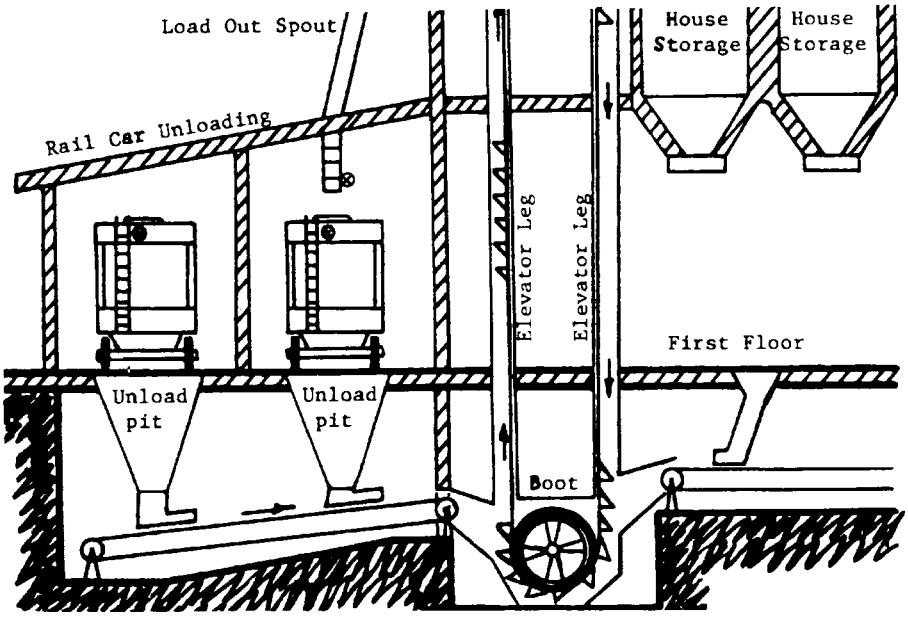
4) Can the amount of grain weighed during the time that the seal or lock was broken be certified on the weight certificate?

(b) Notify the FOM or AFOM.

(c) Correct the problem and ensure against future breakages.

(d) Make proper notations on the Seal Log and the Weight Loading Log.

RAILCAR UNLOADING AREA DIAGRAM



c. Inbound Grain Flow Operations

Grain is generally received by railcar, truck, or barge and weighed either on vehicle/truck scales, railway track scales, or is elevated to be weighed on hopper scales in the house.

(1) Inbound Carrier Unloading Area

(a) The railcar unloading area consists of unloading pits that receive grain from cars. Grain is usually moved by conveyor belts into the boot of an elevator leg

which lifts the grain through the elevator and deposits it into a holding garner above the scale.

1) The railcar unloading pit is a rectangular shaped bin that funnels grain from railcars to conveyor belts located underneath the pit. Grain frequently overflows the unloading pit and spills out onto the track area. If uncontaminated, push this grain back into the pit upon completion of each railcar or unit train (however the lot is being certified). The pit itself must be completely free of grain when the lot is finished. Carefully monitor the area beside the conveyor belt for grain spills (especially the area below the unloading pit).

2) A railway track scale weighs the railcar prior to (gross weight) and after (tare weight) unloading. When obtaining the weight of grain from an inbound railcar on a railway track scale, the grain flow does not have to be monitored by official personnel.

(b) The truck unloading area consists of the truck dump pit and/or the truck platform scale. In many locations, the platform scale also functions as a hydraulic truck dumper.

1) The truck unloading pit is a small bin used to funnel grain to the conveyor belt or boot of an elevator leg.

a) The elevator leg lifts the grain through the elevator to deposit in a garner above a scale for weighing.

b) If the weight of the grain from a truck is obtained on a vehicle/truck scale: 1) grain flow does not have to be monitored; and 2) spills along basement conveyor belts need not be recorded (unless they pose a safety hazard).

c) If grain from the truck is weighed in the elevator on its house scales: 1) spills must be recorded; and 2) the unloading pit must be emptied between each lot.

2) A vehicle/truck scale is used to weigh the truck prior to (gross weight) and after (tare weight) unloading.

(c) The barge unloading area consists of a marine leg (or a similar unloading device) and a conveyor belt that transports grain into the elevator facility to a leg and then to a scale for weighing. In some areas, inclined belts are used to elevate the grain from the barge to the house scales.

1) A marine leg is similar to an elevator leg except smaller, movable, and positioned to remove grain from waterborne carriers.

a) The leg is lowered into a barge or vessel hold.

b) The marine leg's lower pulley is exposed to allow grain to be removed from the carrier.

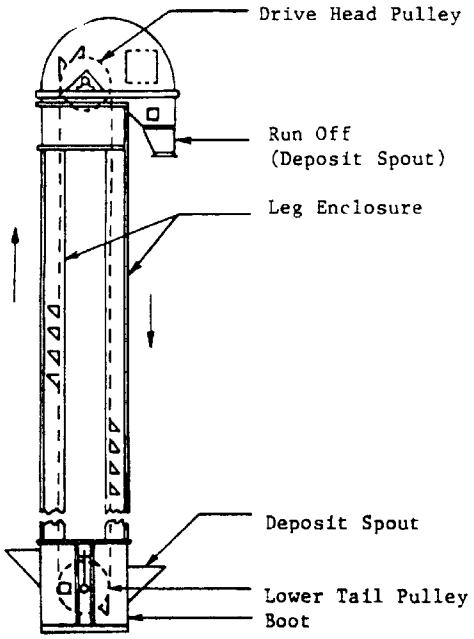
2) Monitor the entire route the grain travels from the barge unloading area to the scale(s) for spills, leaks, and diversion points.

(2) Movement of Inbound Grain Within the Elevator

(a) The basement contains conveyor belts that carry grain from storage bins, truck receiving pits, and car receiving pits to the boots of elevator legs.

(b) The boot encloses the tail pulley of an elevator leg. Grain is deposited into the boot by spouts or belts. The grain is picked up by the elevator leg to travel to the head floor. Many boots are surrounded by a pit area. This is a prime location for spilled grain because constantly moving grain can wear holes in the metal. Grain leaks out through the holes and accumulates in the boot pit or the area surrounding the leg.

ELEVATOR LEG



(c) An elevator leg raises grain by the use of buckets attached to a vertical belt which moves around a drive (head) pulley located at the top (head floor) and a pulley (tail) at the bottom. As the belt moves around the lower pulley, each bucket scoops up grain and carries it to the head floor where it is usually deposited into the upper garner. The elevator leg is completely enclosed by tin or steel plates.

Grain elevators may have several legs and official personnel must know the following:

1) The locations of all legs;

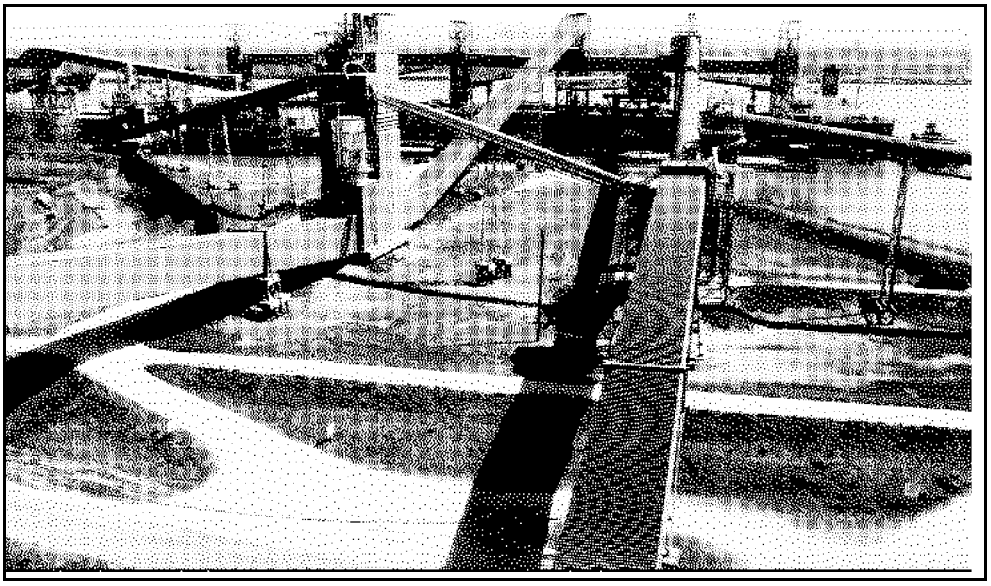
2) What belts or spouts supply them with grain; and

3) Where the legs can deliver the grain.

Moving grain can cause holes to wear in the leg encasement, resulting in leaks and spills on any floor in the facility. Emergency release doors exist in the run-off spouts of some legs to prevent "choking" the leg when the upper garner of a scale system overfills. This allows grain to escape the delivery system and, on inbound grain that has not been officially weighed, requires recording the grain as a spill.

Slipping drive belts and loose or separated buckets are safety hazards. Report them immediately to the supervisor.

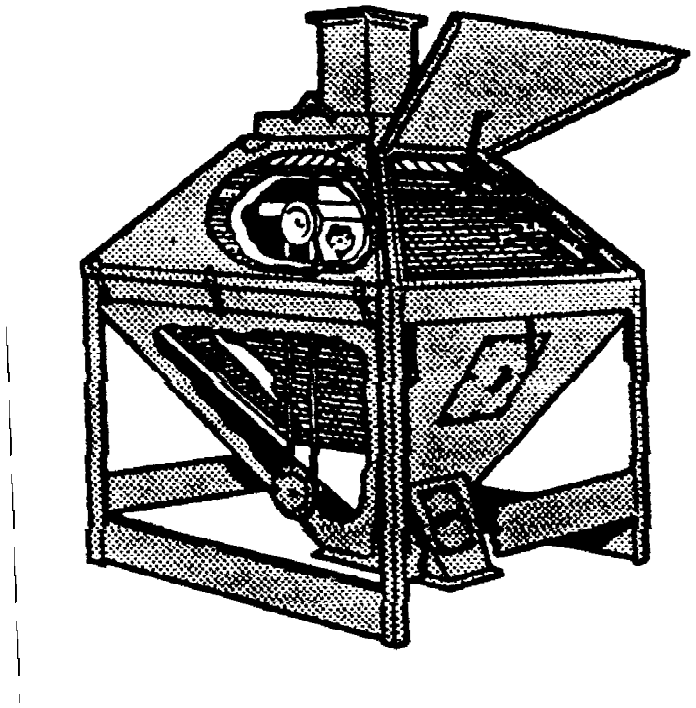
Incline Belts



Incline belts are used by some elevators to elevate the grain. Instead of elevator legs the grain is elevated on conveyor belts which are inclined at about 30-45 degrees. Some elevators use these belts to carry grain to and from the wharf, while others completely replace the elevator legs and exclusively use incline belts to elevate grain.

(d) The Head Floor is the top floor in the elevator; it houses the head pulleys of the elevator legs, the upper garner inspection doors, possible diversion points in the grain flow, grain cleaning devices, and sampling equipment. In some elevators, grain can be diverted immediately after elevation. Secure this area and monitor for inbound grain.

GRAIN CLEANING APPARATUS



(e) Grain cleaning apparatus separate large nongrain materials, such as pieces of wood, stones, cans, etc., from the grain or are used to separate screenings (dust or broken kernels) from whole grain. A cleaner can be located anywhere within the grain flow system. Inbound grain must not be cleaned before it is weighed.

(f) A Diverter-Type (D/T) Mechanical Sampling, an inspection device located in the path of grain flow, is used to obtain grain samples for determining grain quality and may be found in many locations throughout the elevator. Refer to the Mechanical Sampling Systems Handbook for specifics and requirements.

(g) Inspection doors of the upper garner allow access to the upper garner for cleaning or inspection and also allow the introduction into the upper garner of

sweepings or materials other than grain to be officially weighed. The weight of this material affects the quality and the accuracy of the officially weighed lot and is prohibited. Sealing these doors is at the discretion of the manager.

(h) Located below the head floor, the scale floor houses the upper garner, weigh hopper, and bulk weighing equipment (mechanical, electronic, or both), and may contain lower garners and turnheads.

1) The upper garner is located above each weigh hopper to serve as a holding bin during the movement of grain prior to weighing. Upper garners are essential to the efficient operation of any grain weighing system; without them, the entire grain supply would have to be shut down during scale discharge.

2) The upper garner gate(s) regulates the flow of grain into the weigh hopper. The gates are controlled by electric motors, air pressure, hydraulically controlled cylinders, or manually operated levers.

3) The weigh hopper is a bin that is independently suspended from or supported by levers or load cells. The weigh hopper temporarily holds grain until a weight can be obtained. Weigh hopper access doors and observation ports must be closed securely to prevent the escape of grain resulting in spills. The weigh hopper lever system must be kept clean of grain and dust to ensure free movement of the lever system.

4) The weigh hopper gate(s) regulates the flow of grain out of the weigh hopper. Control mechanisms are similar to those used for the upper garner gates.

d. Outbound Grain Movement

Outbound grain movement begins immediately upon weighing. Once weighed, the identity of a lot of grain changes. For example, if grain from a unit train is weighed and then conveyed to an export vessel, after the grain has been weighed, the identity of the grain will be that of the vessel. Grain weighed and loaded into other carriers, regardless of its original source, is outbound grain.

(1) Scale Floor Description. (See the section preceding this one c. (h))

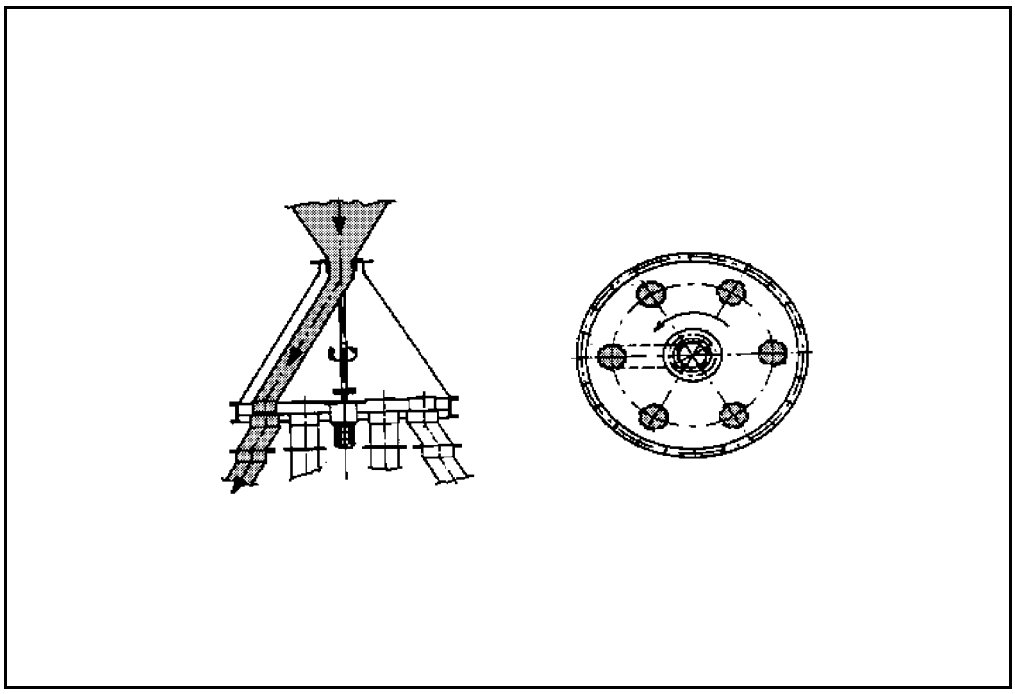
(2) Additionally, some elevators have a lower garner or surge bins which are located beneath the weigh hopper to regulate the flow of grain. While they are not as essential as upper garners and many elevators do not have them, they do allow for a quick and even scale discharge, and therefore, a more efficient weighing operation.

(3) Distributor Floor Description and Functions

Usually located below the scale floor, its main function is to give the elevator versatility in moving grain through the elevator to a loading or storage area. Many types of mechanisms are found here including turnheads, trolley spouts, tripper/belt combinations, and permanent or movable spouting.

Spills occur on the distributor floor during changes in grain flow direction and as a result of wear in spouts caused by moving grain. When spills occur, the intended destination of the grain must be known to correctly account for spills. The distributor floor, the most concentrated area of diversion points in the elevator, must be particularly well monitored to ensure correct weights.

DISTRIBUTOR



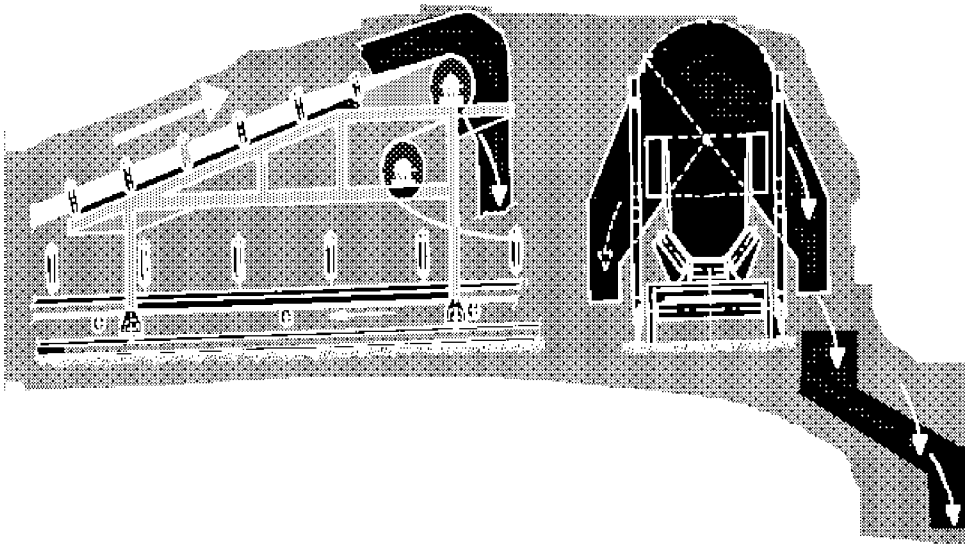
Distributors (rotary pictured) are movable spouts located outside or inside the elevator and positioned to revolve over permanent spouting. Distributors (turnheads) control distribution of grain to bins or to carriers.

(4) Bin Floor Description

The bin floor houses cleaner machines, screw conveyors, conveyor belts, and overhead access to shipping bins, house storage bins, screening bins, and spouts.

(a) Valves direct, limit, or seal off the flow of grain at any given point. Official personnel must know the different types (see glossary); their capabilities, and control (e.g., manual or hydraulic).

CONVEYOR BELT WITH TRIPPER



(b) A conveyor belt travels between two pulleys to carry grain.

(c) A tripper is a mechanical device for directing the flow of grain off of a conveyor belt into a spout or bin. More than one tripper on a conveyor belt is possible and most are movable. Some trippers can direct grain off either side of a conveyor belt; the weigher must ensure proper direction so that the grain flow is not misdirected.

(d) The shipping bin area houses shipping belts and bins. Spills at any point along this path must be recorded or else immediately returned to the flow of grain. Spills are found most often where the path of grain makes an abrupt change in direction (i.e., out of a spout and onto a conveyor belt, belt junctions, and trippers).

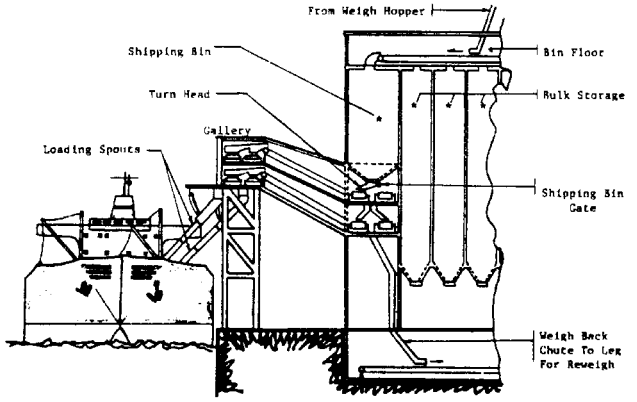
(e) Shipping bins are used to hold grain prior to carrier loading and add to the responsibilities of official personnel.

(f) Access openings to the bins for cleaning and inspection are located on the bin floor.

1) Sealing these openings is at the discretion of managers.

2) Use of shipping bins varies from elevator to elevator. 1) Facilities that sample grain before it is loaded into shipping bins often completely fill and empty the bins for each sublot. 2) Other facilities use shipping bins to control the flow of grain and for mixing purposes, and will continuously run grain into and out of them.

SHIPPING BIN AREA DIAGRAM

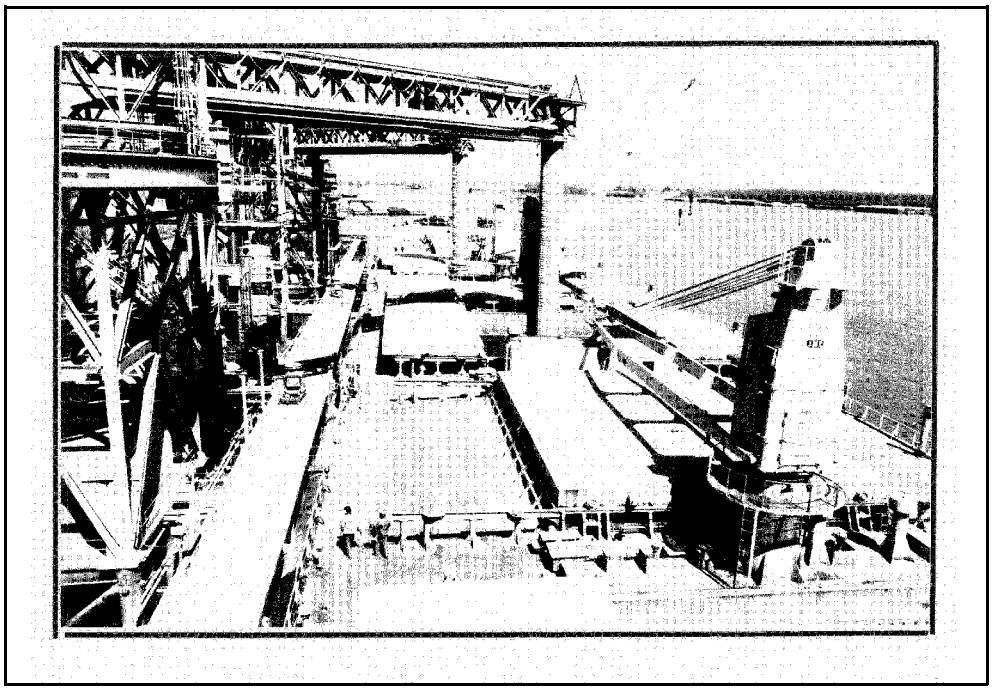


3) Shipping bin gates regulate the flow of grain from the shipping bins. Their use is restricted by the grain flow security system. Shipping bin gates must be secured in the absence of official personnel.

(g) Shipping belts carry grain to the loading spouts.

(h) Weighback spouts return grain from the shipping bins to be elevated and re-weighed, can be movable or permanently fixed, and must be secured when not in use.

SHIPLOADING AREA



(i) Waterborne carriers are loaded and unloaded in the shiploading area. The gallery, loading spouts, and marine legs are located here.

1) The gallery is an extension of the shipping bin area. Conveyor belts and/or chain drags located here direct grain to the loading spouts. This is another location where trippers are found on conveyor belts. Some elevators may have D/T mechanical samplers located in the gallery.

2) Loading spouts direct grain into the vessel's stowage area. Moving grain often wears holes in the metal loading spouts resulting in grain spill and leaks. Monitor the delivery system, report damage immediately, and account for all grain spills and leaks.

3) Monitor the vessel area and account for spills on the deck, on the dock, and into the water.

1.6 SUPERVISION OF WEIGHING (CLASS Y)

FGIS and agencies, upon request, provide Class Y weighing service under the authority of the Act. Weighing facility operators may request Class Y weighing service for grain shipments not requiring mandatory Class X weighing service as prescribed in Section 5 (a) (2) of the Act (i.e., export shipments and inbound intercompany barge shipments at export port locations). Approved weighing personnel under FGIS or agency supervision provide the Class Y weighing service using approved weighing equipment.

a. Procedures for Requesting Service

A written request for Class Y weighing service must be filed with official personnel responsible for the area where the service will be provided. It must include: 1) The applicants name and mailing address; 2) if applicable, a request for Form FGIS-1001, "Application for Approval to Operate as a Weighing Facility"; 3) the scope and effective date of Class Y weighing service desired; and 4) other pertinent information requested by official personnel.

To qualify for Class Y weighing services, the applicant must comply with applicable requirements of the regulations and instructions under the Act.

(1) Equipment

The applicant has and maintains suitable grain handling equipment and accurate scales as required in Part 802 of the regulations (7 CFR Part 802 et seq.) and Chapter 3 of the Weighing Handbook.

(2) Personnel

The applicant permits only competent, approved weighers to operate the scales and handle grain in connection with Class Y weighing.

(3) Procedures

The applicant requires approved weighers to operate the scale(s) in accordance with regulations and instructions issued under the Act and requires each lot of grain be delivered from the carrier to the scale or from the scale to the carrier in its entirety without avoidable waste or loss.

b. Facility Approval by Official Personnel

Prior to commencement of Class Y weighing services, the scale and grain handling system as it pertains to the Class Y weighing service must be approved by official personnel. Upon applicant request, official personnel provide form FGIS-1001, which requests facility

information and requires the facility management's list of competent weighers trained to operate the weighing systems under regulations and instructions issued under the Act. Official personnel must perform a site visit to determine that the equipment and personnel requirements for providing Class Y weighing services have been met.

c. Form FGIS-964, "Supervision of Grain Weight Certificate"

The Class Y weighing certificate, form FGIS-964, is yellow in color and shows "Class Y Weighing" screened across the front. Printed on the certificate are statements indicating the conditions under which the service is performed. Applicants may request that "special design" Class Y weighing certificates be printed. Requests are handled according to existing regulations and instructions.

(1) Official Personnel Responsibilities

(a) Supply form FGIS-964 certificates to the applicant. Special design Class Y weighing certificates must be purchased by the applicant.

(b) Supply Chapters 1, 2, and 3 of the Weighing Handbook to the facility operator.

(c) Maintain accountability records for all certificates provided.

(d) Monitor certificate accuracy.

(2) Grain Facility Operator Responsibilities

(a) Issue certificates sequentially.

(b) Inform official personnel of missing certificate numbers.

(c) Maintain a copy of each certificate issued for review by official personnel.

(d) Ensure only approved weighers perform Class Y weighing and official personnel have a current list of approved weighers.

d. Class Y Weighing Documentation

Facility managers must retain copies of Class Y certificates, original scale tapes or tickets, and other supporting documents for 5 years. Scale tapes and tickets, in addition to the recorded weights, must show the date, the approved weigher's name or initials, carrier identification, kind of grain, and scale number. Whenever a certificate is voided, mark the original "VOID" and retain at the facility, and destroy copies of voided certificates.

e. Approved Weighers

Only approved weighers listed on the form FGIS-1001 may perform and certificate Class Y weighing services. If the facility's personnel fluctuates because personnel are hired from employment pools, such as longshore personnel, the individuals who directly supervise these individuals (facility) or "key" longshore personnel are listed.

Approved weighers must obtain accurate weights on all grain weighed; certify that weights are obtained according to the Weighing Handbook; and document following procedures in the Weighing Handbook any unusual events that occur during the weighing operation (i.e., power failures, scale malfunctions, spills, and other events pertinent to the weighing operation). Prior to Class Y weighing, the applicant must notify the supervising office following established procedures.

f. Supervision Method

The supervising office establishes with the applicant a notification process for Class Y weighing activity. Official personnel must supervise a minimum of 25 percent of Class Y weighing or more as determined by the supervising agency. Support increased supervision with adequate documentation.

(1) Export Location Supervision Official personnel stationed at the facility providing inspection and Class X weighing services normally supervise the Class Y weighing. Where there is a large physical distance between the Class X and Class Y weighing operations, extra personnel may be required . A charge for Class Y weighing is applied only when extra personnel are required.

(2) Interior Location Supervision

Supervision is provided by official personnel stationed at the facility providing inspection and/or Class X weighing services or by periodic trips to the facility.

g. Official Personnel Responsibilities

Official supervision personnel must observe the approved weighers doing their duties. The entire weighing process, including scale operations and grain weight certification, must be supervised.

(1) Determine that the grain handling system is adequately monitored for spills and leaks.

(2) Determine proper documentation by approved weighers of 1) leaking or damaged carriers, 2) grain left in the carrier, 3) spills, and 4) any other situation affecting the certificated weight. Ensure this information is recorded on the scale tape or ticket for the carrier (or on a supplemental information sheet attached to the scale tape or ticket) and initialed by the approved weigher.

1.7 SPECIAL PROCEDURES

a. Information Requested by Interested Persons

(1) Definition of "Interested Person"

As defined in the Act, the term "interested person" means any person having a contract or other financial interest in grain as the owner, seller, purchaser, warehouseman, carrier, or otherwise. Persons who are employed by or represent carriers in the capacity of investigating claims against the carrier regarding the weight are considered "interested persons." When a properly identified interested person requests information pertaining to the official weighing of a carrier or other information routinely recorded on logs, tapes, and certificates, provide this information.

(2) Deny Blanket Requests

Do not honor blanket requests such as requests for information on all carriers weighed over a period of time. A request must identify the specific carrier(s) involved.

b. Facility Handbook Requirements

Field offices and agencies must maintain an up-to-date elevator Facility Handbook for each location where official personnel provide Class X or Class Y weighing services. The length and scope of the handbook depends upon the complexity of the facility and the extent of the agency or field office involvement in providing official weighing service.

Facility handbooks are used in conjunction with and as a supplement to the Weighing Handbook. Up-to-date copies of the handbook are kept at the inspection laboratory and at the scale floor or control room of the referenced grain elevator for use by official personnel. Keep the original of each handbook in the office of the issuing agency. AM's must forward copies of each Facility Handbook and subsequent revised handbooks to their respective field office. FOM's must send a copy of each handbook and subsequent revised handbooks to the Weighing and Equipment Branch.

Minimum information requirements follow.

(1) Safety Requirements, including specific elevator safety rules.

(a) Location of smoking and non-smoking areas.

(b) Location of hardhat areas.

(c) Diagrams of emergency evacuation routes.

(d) Emergency evacuation phone numbers for reporting fires, explosions, hazardous conditions, and missing personnel. (See 29 CFR 1910.272 (d) (e).)

(2) General Elevator Layout Description

(a) Describe the elevator's entire grain handling system: the location of the dock, elevator, headhouse, and FGIS and/or agency office space.

(b) Illustrate the elevator layout using detailed, labeled diagrams of all floors in the facility. (The floors may be illustrated separately or collectively as a cross section of the facility.)

(c) At facilities where official weighing activities are limited, only the description or illustration of official weighing areas is required.

(3) Grain Flow System Descriptions

(a) Specify weighing procedures and official personnel responsibilities at the facility i.e., procedures and frequency for checking shipping bin indicators.

(b) Provide grain flow diagrams and/or photographs that identify all diversion and seal points. (Grain flow diagrams and elevator layout diagrams may be illustrated together.) Include a description of security measures and surveillance procedures for ensuring the integrity of the grain flow.

(c) Describe all weighing systems (include scale capacities, minimum divisions, and model numbers), printers (with the type of information they record), auxiliary power scale accessories, sealed or locked limited access areas of the scales and their accessories, and any other pertinent information to aid in recognizing scale and printer malfunctions.

(d) Describe the elevator's control panel(s)/monitor(s) that bear official services, and explain terminology used if the controls have customized programming.

(4) Certification and Documentation Requirements

(a) Include copies of locally generated documentation and examples of correct documentation procedures.

(b) Include a checklist or means of documenting required periodic checks of grain flow security, (e.g., biweekly control board indicator light check, carrier clean out, and the pre-weighing and postweighing checks).

(5) Specialized Equipment Standard Operation Procedures

Attach or include standard operating procedures for closed-circuit television systems or automated weighing systems used in official weighing systems.

(6) Unusual Procedure Explanations

Explain any procedures seemingly contradictory to normal handbook instructions, but approved by scale officials, managers, or area chiefs, such as unusual precycling requirements and also procedures unique to that facility.

c. Bulk Commodity Certification

Service personnel may officially weigh bulk commodities for certification under the Agricultural Marketing Act of 1946 (AMA).

(1) "Bulk" are those commodities contained in other than primary containers such as bags, boxes, barrels, etc.

(2) See Chapter 2 for instructions on certifying bulk commodities.

(3) Federal cooperators may certify the weight of commodities under the AMA if authorized by FGIS and licensed under the AMA.

d. Review of Weighing Service

A review of weighing service is a formal review of weighing documentation pertaining to a specific weight certificate. The review includes a detailed evaluation of weight logs, scale tapes, scale history, and other documentation and, if necessary, consultation with individuals involved with the actual weighing. A scale testing official does this review if possible.

The review of weighing service, as covered in this section, is performed when requested by an interested person on domestic shipments. Forward export weight inquiries to the International Monitoring Staff.

(1) Request for Review of Weighing

(a) Requests must be filed within 90 days after the date of the Class X or Class Y weighing service with the FGIS field office or agency that conducted the original service.

(b) The request is considered filed when the oral or written request is received by the field office or agency.

(c) The review of weighing is conducted by the office that performed the official service.

(2) Application Requirements

(a) When required by FOM, use Form FGIS-908, "Application for Appeal Inspection or Board Appeal Inspection."

(b) When required by AM, a customized application form which includes the following may be used.

1) Name and mailing address of applicant.

2) Name(s) and address(es) of interested persons.

3) Carrier identification, quantity, and the official service location.

4) Copy of original weight certificate.

5) Any additional pertinent information required by the field office or agency to complete the review.

(3) Required Review Information

(a) Review all pertinent documentation, such as certificates, logs, and scale test reports.

(b) Identify the kind (hopper, vehicle, or railway track) and type (mechanical, dial, or full electronic) of scale.

(c) Analyze other available information, such as scale history and past facility weight performance history.

(d) Thoroughly review the scale tests before and after the time under review.

(e) Additional scale test and travel to the facility for onsite review may be required.

(4) Methods and Content of Response

(a) If the review of weighing service indicates that the results of the original weighing service were correct, notify the applicant in writing.

1) Explain the review process for tapes, logs, and scale tests, or any other documentation and the results.

2) Detail the observation of weight quantities of lots loaded/unloaded before and after the carrier(s) in question.

3) State the grain handling system security used.

(b) If the review of weighing service indicated that the results of the original weighing service were incorrect, issue a corrected certificate.

(5) Guidelines for Handling Service Requests

(a) Only one review of weighing service is allowed on any original Class X or Class Y weighing service.

(b) Report any additional inquiries to the Weighing and Equipment Branch.

(c) Notify headquarters through appropriate channels of any review of weighing that has the potential for 1) resulting in Congressional inquiries, 2) causing adverse action by trade groups, 3) setting a trend, or 4) requiring action by FGIS headquarters.

(d) Send a copy of all requests for review of weighing service and the response to the Weighing and Equipment Branch through the appropriate channels.

e. Official and Unofficial Weighing

Official and unofficial weighing may not be performed concurrently by official weighing agencies at an elevator within its assigned area of responsibility. For the purposes of this section, each mode of conveyance for carriers is considered separately in the facility's weighing approval (i.e., rail, vehicle, barge).

If a facility wishes an agency to change from official to unofficial service, the supervising office must receive written notification from the facility to terminate its official weighing status. Facilities must reapply to the responsible agency to resume official service by completing form FGIS-1001, "Application for Approval to Operate as a Weighing Facility." (See Chapter 2 for instructions.) The supervising field office must reevaluate the request for changes in the weighing system before allowing official service to resume. Field offices must notify the Compliance Division of changes in approved weighing facilities status so that the agency's designation documents (Appendix B) are kept current.

1.8 APPROVAL AND USE OF OFFICIAL MONITORING AND CONTROL SYSTEMS

Responsible officials must follow proper procedures in handling proposals for elevator-provided electronic control and monitoring systems. This assures official supervision is properly maintained when automating a system to change functions normally performed by official personnel.

a. Field Management Division (FMD) Responsibilities

(1) Provide parameters for use as guidelines in developing automation systems proposals.

(2) Review automation proposals from the grain industry.

(3) Approve/disapprove initial automation proposals.

(4) Provide official personnel with information on the intentions of the grain industry to automate elevators within their area.

(5) Update the automation parameters to reflect changes in technology and industry practices.

(6) Oversee installations and provide technical guidance to facilitate the installation, approval, and operation of automated weighing and material handling systems.

(7) Provide security guidance for automated weighing and material handling systems and update security measures in response to changes in technology and industry practices.

(8) Provide an outline for Standard Operating Procedures (SOP) and assist in developing these procedures.

(9) Approve/disapprove revisions and/or modifications to already approved automated systems.

b. FGIS Field Offices and Agency Manager Responsibilities

(1) Make initial survey of automated weighing sites and evaluate official equipment and staffing needs.

(2) Inform employee representatives of industry and agency intentions regarding use of automation.

(3) Designate an "Automation Project Leader" whose duties include but are not limited to the, following functions.

(a) Provide liaison between the Weighing and Equipment Branch (WEB), field office, and the elevator during the installation of automated equipment.

(b) Write and publish a SOP using the outline provided by WEB's engineering staff.

(c) Assist in developing training aids for field office personnel and perform approval testing of equipment and software.

(d) Provide training in the operation of automated systems with technical assistance from WEB's engineering staff.

(e) Offer suggestions to improve the installation, operation, or security of automated official equipment.

(4) Check and maintain security of the systems, including but not limited to:

(a) hardware locks and seals;

(b) software modifications;

(c) password security and revisions; and

(d) approve, document, and monitor any changes made to the scales or material handling systems.

(5) Perform periodic system tests to assure system integrity, security, and correct operation (6 month check).

(6) Provide final approval that the automated system meets the needs of the field office for providing official service.

c. Facility Responsibilities

(1) Provide FGIS with a detailed initial automation proposal.

(2) Provide FGIS with a complete hardware and software design specification.

(3) Provide complete documentation on any changes to hardware, software, and operations from the original proposal.

(4) Assure all automation hardware and software comply with FGIS requirements.

(5) Provide FGIS with a complete final hardware and final software design specification.

(6) Provide assistance in training of official personnel by making the system and all necessary equipment available for initial and ongoing training as determined by FGIS.

d. Recommended Project Outline for Automation Approval

(1) Official Proposal from Elevator

(a) Initial contact made with local field office.

(b) Review and evaluation by WEB.

(c) Written approval/disapproval of proposal from WEB.

(d) Information to field office from WEB.

(2) Technical Oversight Provided by WEB

(a) Checks of proposed security measures.

(b) Instruction to field office on system parameters.

(c) Guidance to facility on system installation (aided by field office).

(d) Initial system inspections (aided by field office).

(3) Hardware and Software Installation by Elevator.

(4) Final Testing and Approval by Field Office and WEB

(a) Six-month evaluation testing monitored by field office.

(b) Training of FGIS inspectors provided by field office and WEB.

(c) Errors in the system recorded and reported by field office.

(d) All reported system problems corrected by elevator.

(e) System approval given by field office and WEB.

(f) Final approval for official weighing given by FOM.

(g) Written final acceptance from FMD to elevator

(5) Completion of All Documentation.

(a) Necessary documentation from all parties -- elevator, field office, and WEB.

(b) For future use in evaluation and testing.